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09.2000

# Macworld

# CHANGE

## IT'S SCARY. IT'S EXCITING.

Ten Trends That Are Remaking Your Mac, p. 40

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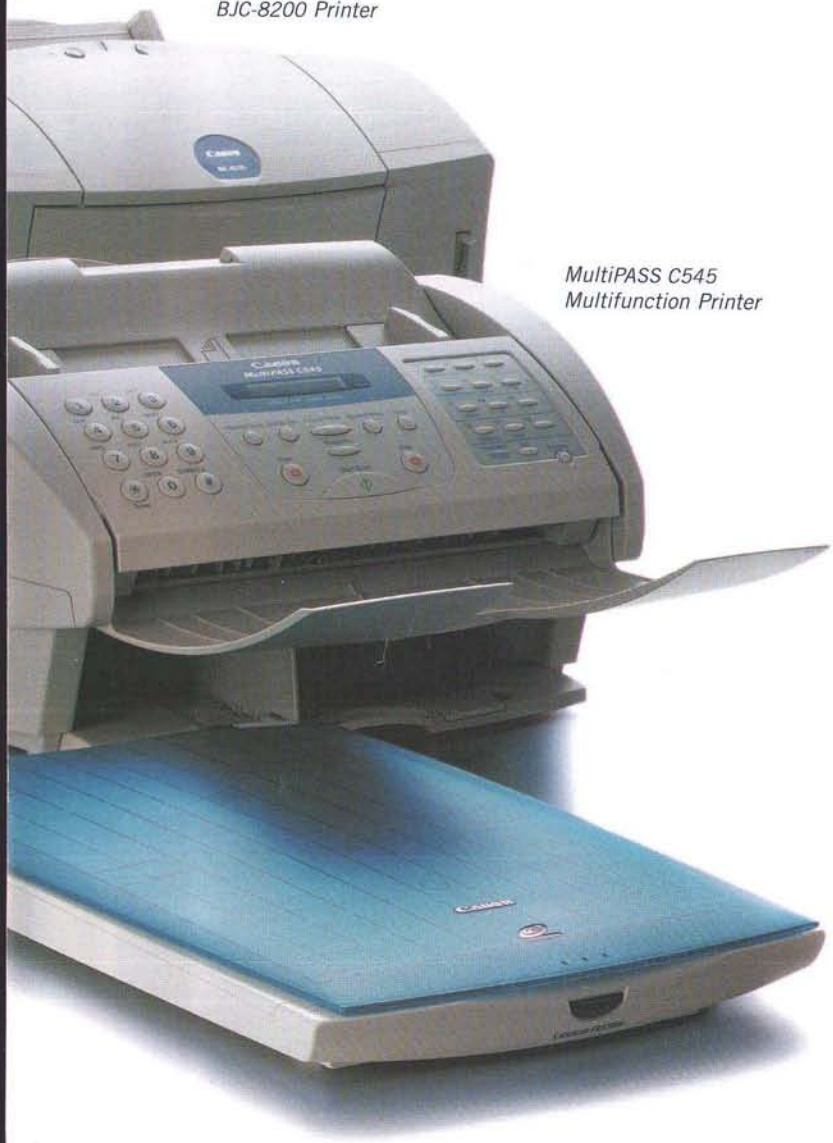

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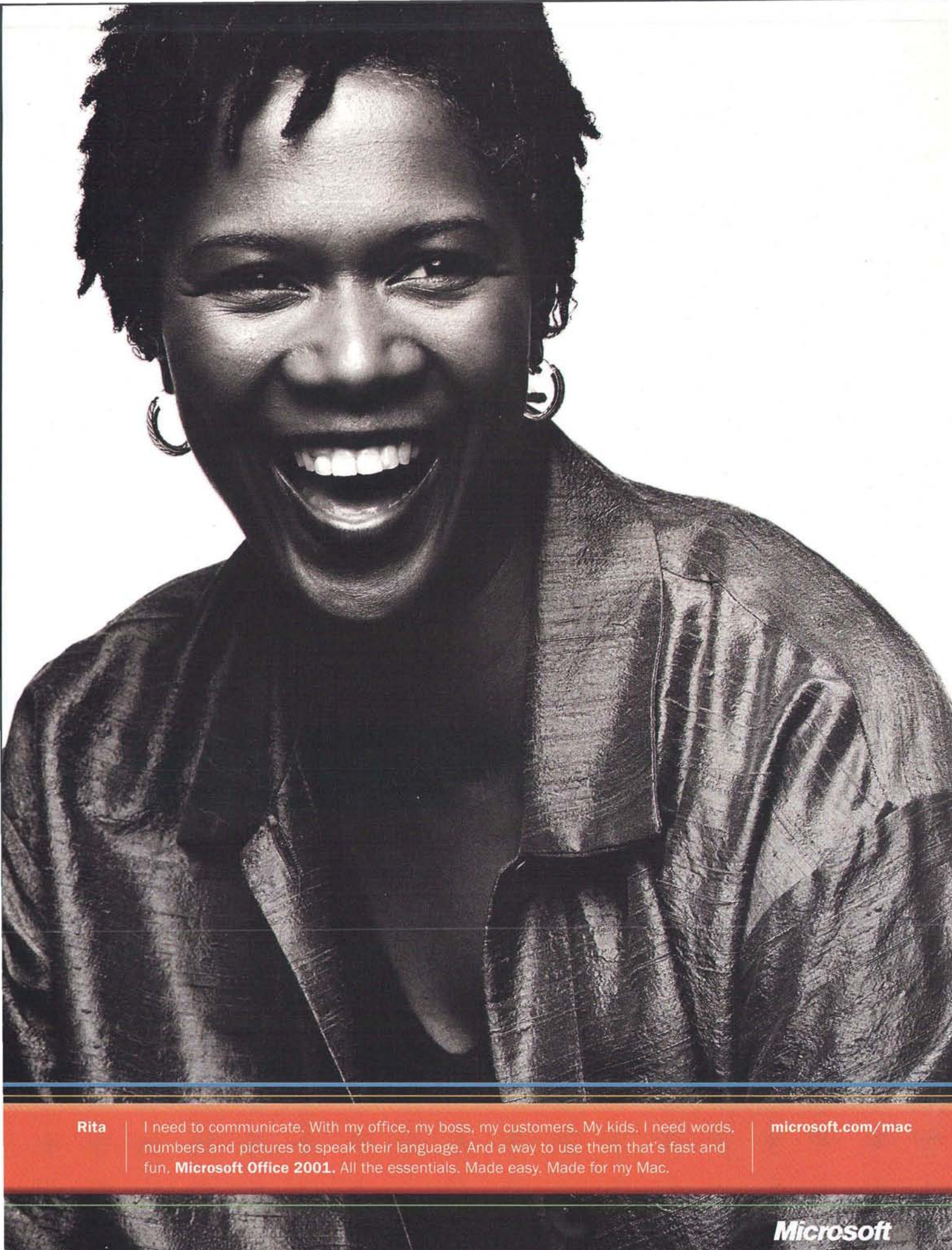
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September 2000

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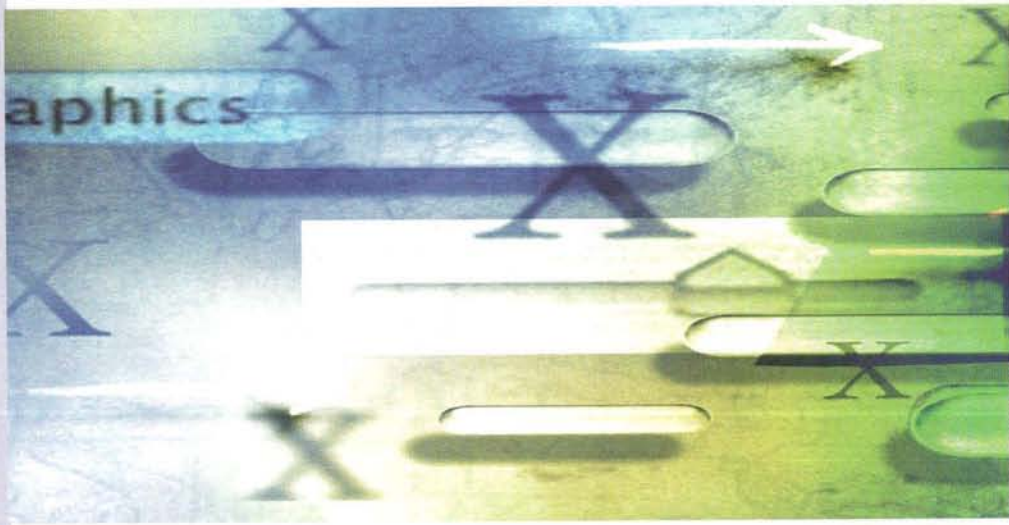
## CHANGE. IT'S SCARY.




From desktop video and the wired life to OS X—you can now do things you never thought possible with your Mac. Find out what industry insiders have to say about the top 10 trends affecting Mac users.

40

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**Buzz**
The portable MP3 player gets stylish with the Rio 600.

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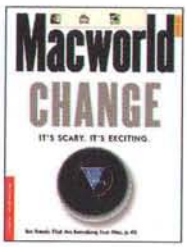


**Welcome**

*Macworld* has a whole new look! Take a guided tour of the past and the present with Editor in Chief Andrew Gore.

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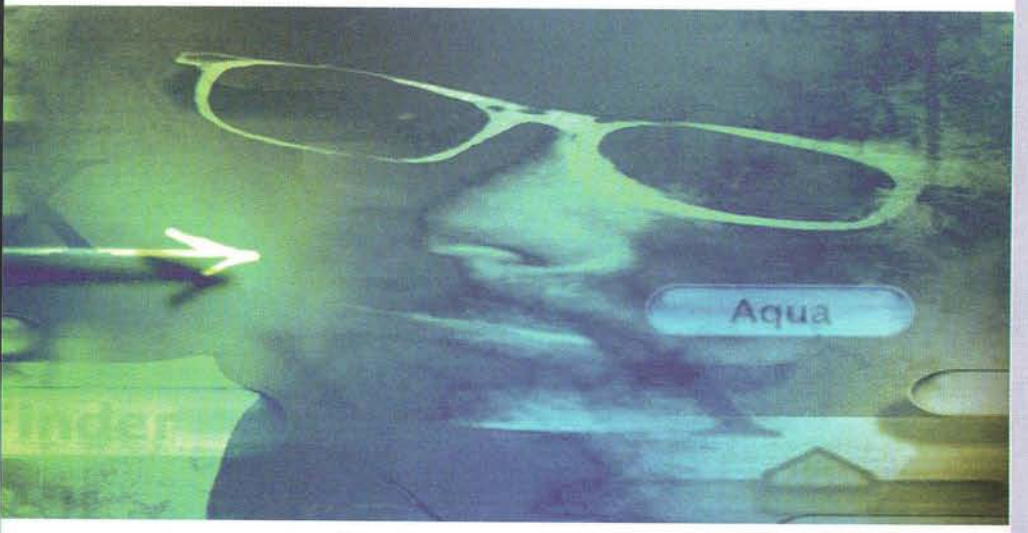

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Capture every last detail with these three-megapixel cameras.

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JEFFREY ZELDMAN Web images and text sometimes display differently on Macs and Windows PCs. But with a little planning, you can make your sites look good on both platforms.

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*Photograph by Mark Johann*

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118 ♦♦♦½ **Amapi 3D 5.15**
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120 ♦♦½ **Fantom FireWire Orb**
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122 ♦♦♦½ **Spark 1.5**
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122 ♦♦♦ **Bingo Bingo Bingo**
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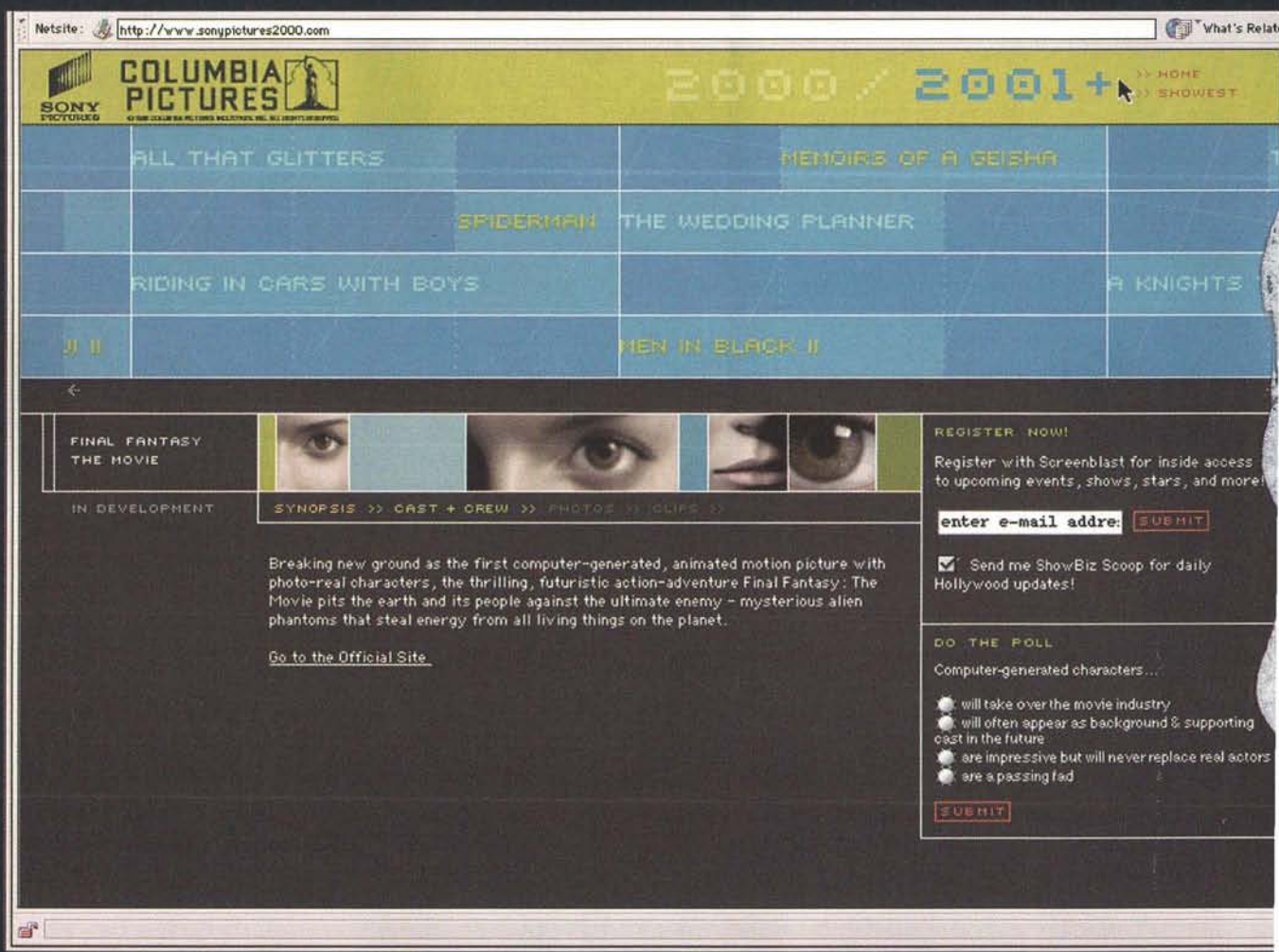


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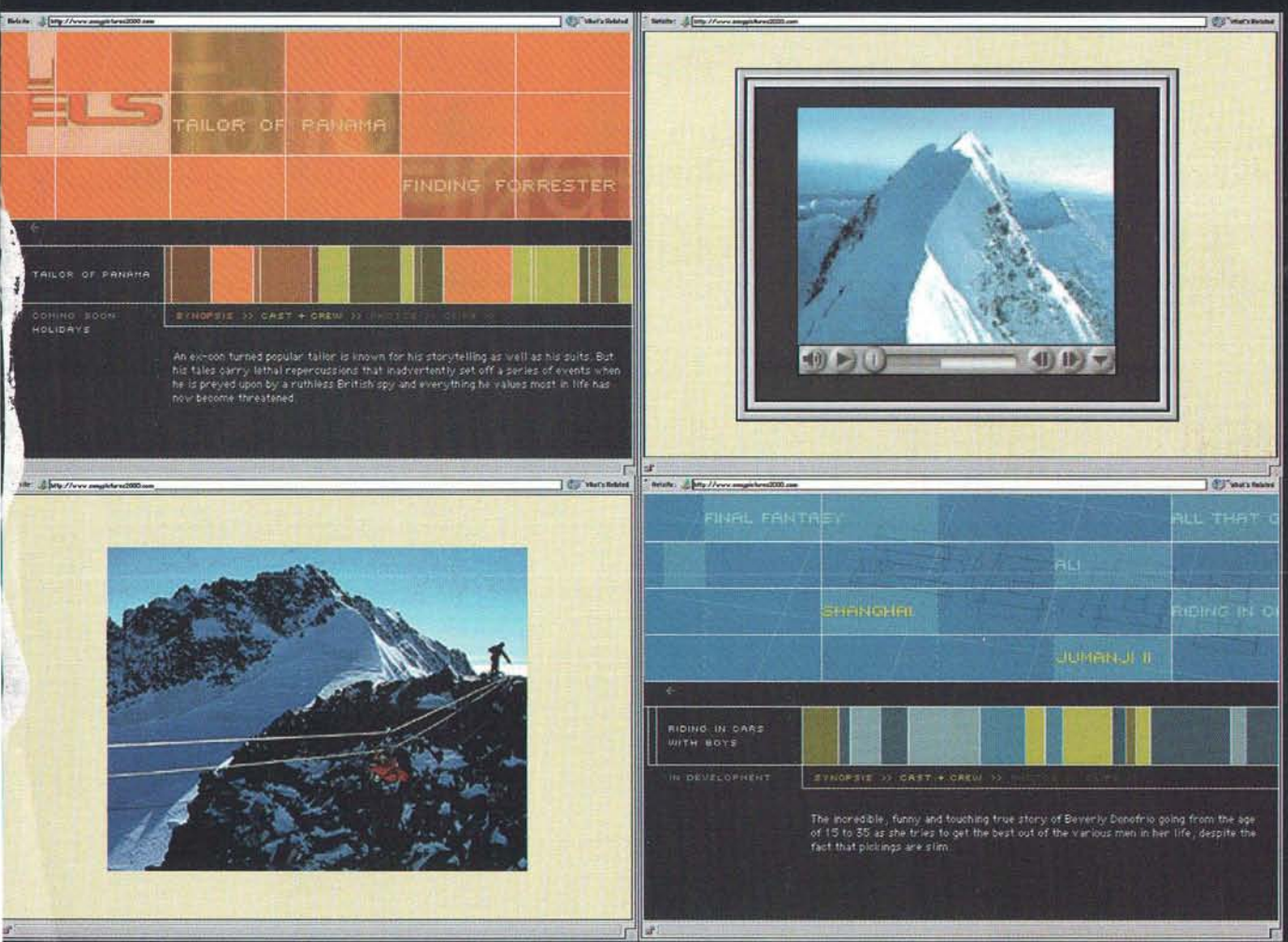


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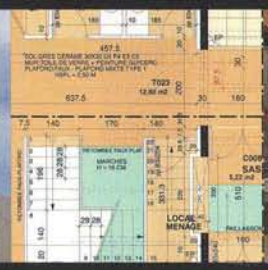

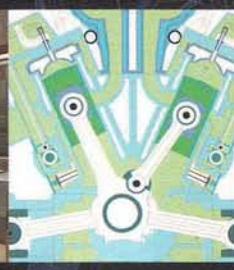

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ANDREW GORE

# Reinventing Macworld

THE MAC WORLD IS CHANGING, AND SO IS *MACWORLD*. AND THAT'S

**Notice anything different this month? Now, I realize that change can be a little disconcerting, and we all know that change is not always good.**

But if you've leafed through the pages of this, the debut issue of *Macworld*'s first major redesign in seven years, I think you'll find that sometimes change can be a very good thing, indeed.

**Good and Good for You**

As you'll read elsewhere in this issue (see the feature story "Welcome"), *Macworld*'s makeover has been a long time coming. Through the past two years, we've worked hard not only to update the magazine's look but also to modify its structure to better serve you.

You see, we're really interested in you—so much so, we study you on a regular basis. From surveys, focus groups, and electronic feedback, we have a pretty good sense of who you are, why you use a Mac, and what you like—and don't like—about this publication.

In general, you seem pretty happy with *Macworld*. This magazine enjoys some of the highest subscription-renewal rates and has some of the longest-standing subscriptions in the business. In studies, you've used words such as *reliable, credible, comprehensive,* and *objective* to describe us.

Unfortunately, another description occasionally came up: reading *Macworld* is "like doing homework." Yes, the content is there—but getting to it can be a trial. And while there was once a time when part of the joy of reading *Macworld* was setting aside a few hours in the evening to leisurely read the magazine from cover to cover, none of us seem to have that much time these days.

That's why we've added more than a fresh new look: for example, a consolidated how-to section, now with a standardized step-by-step layout—a very clear way of communicating instructional information. And while our reviews continue to provide the accuracy you've come to depend on, we've added new ways for you to get a quick grasp on the pros and cons of every product we examine. We're also striving to bring a more personal tone to *Macworld*—that of a knowledgeable friend, not a lecturing professor.

**The Ever Changing Mac**

The Mac has changed to meet your changing needs. 1993's Apple is long dead, and new products such as the iMac and iBook have introduced a new sense of style to computing.

But while we may be a bit dazzled by the pretty colors and translucent plastic, let's not forget the power that lives inside that candy-coated shell. Suddenly, even iMac users have access to technologies such as FireWire, DVD, digital video, AirPort wireless networking, and high-speed Internet access. It's all there for the taking—if you know how.

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Telling you about a computer's specifications is no longer enough. The days when we could just splash a number followed by "Megahertz!" on our covers and still satisfy readers are gone. Why? Because *all* Macs sold today are incredibly fast and powerful, and even the newest, fastest Macs are only incrementally faster than what came before them. What matters today is getting the most out of that Mac.

This is not to say that *Macworld* is only now focusing on great how-to articles. We've always had great instructional material in the magazine—scattered across our *Secrets* and *Create* sections and in our features. But with this issue, we're collecting that content in one place, the new *How-to* section. There you'll find feature stories, step-by-step articles, and our new *Mac 911* troubleshooting column—all geared to help you get the most out of your Mac and the programs you run on it.

**The Changing Face of News**

Another major change in this issue is the departure of *Macworld*'s *News* section, replaced with a new section called *Buzz*.

In a world where the Internet dominates, it's impossible for a monthly print magazine—especially one with a readership as tech-savvy as *Macworld*'s—to cover breaking news in a relevant manner. Enter *Buzz*, which still provides news and information about the Mac but does so with style and humor. We're hopeful that *Buzz* will inform you about the most important topics in the Mac world but will also entertain you and remind you why you're a Mac user.

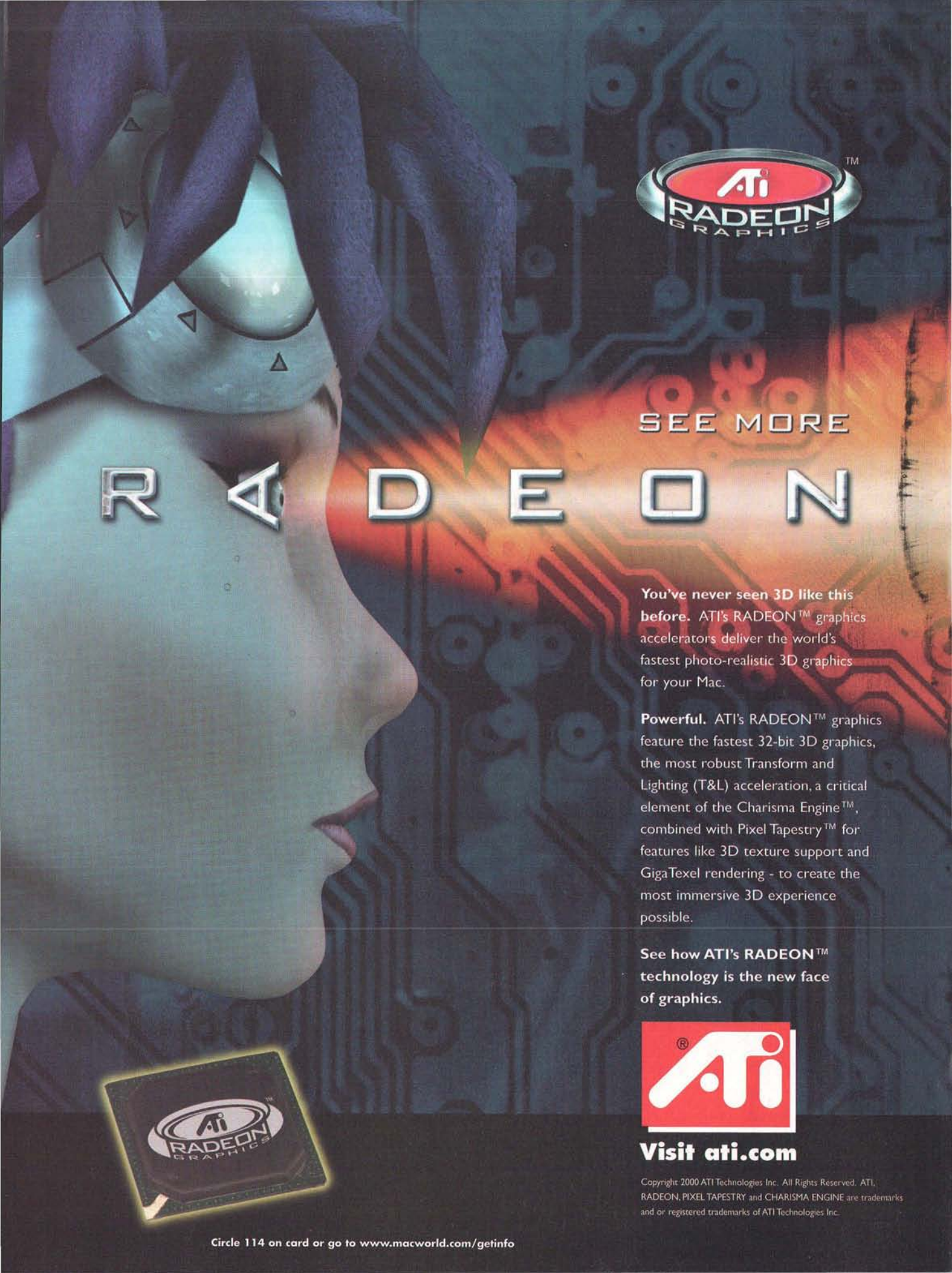
We've also tried to reintegrate some of the elements of *MacUser* that were lost when that magazine merged with *Macworld* in 1997. Former *Help Folder* author Christopher Breen is now at the helm of *Mac 911*, our new troubleshooting and tips column. And with this issue we also welcome former *MacUser* columnist Andy Ihnatko back to the fold; Andy will be writing our monthly entertainment and gaming column, *The Game Room*.

And, of course, *Macworld*'s redesign wouldn't be complete without the complete overhaul of our Web site. The new Macworld .com is reorganized so that no matter what subject you're interested in, you can find what *Macworld* has to say about it—and you can even weigh in with your own opinion.

Sure, it all starts in Cupertino. But Apple gives you only the hammer—it's up to *Macworld* to show you the things you can build with that tool and point to the nails and wood you'll need to complete your projects.

So, by all means, go back to exploring this new, more accessible, more useful *Macworld*. Hopefully, you'll find that it still delivers those qualities that have been *Macworld* hallmarks since the beginning—trusted product evaluations, expert advice, and in-depth analysis of the Mac—but with more style and humor, and a clearer focus on delivering the information that's important to you. **m**

To comment on this column, go to www.macworld.com/visionthing and post to the Vision Thing forum. Or post your feedback on the *Macworld* redesign at www.macworld.com/2000/09/redesign.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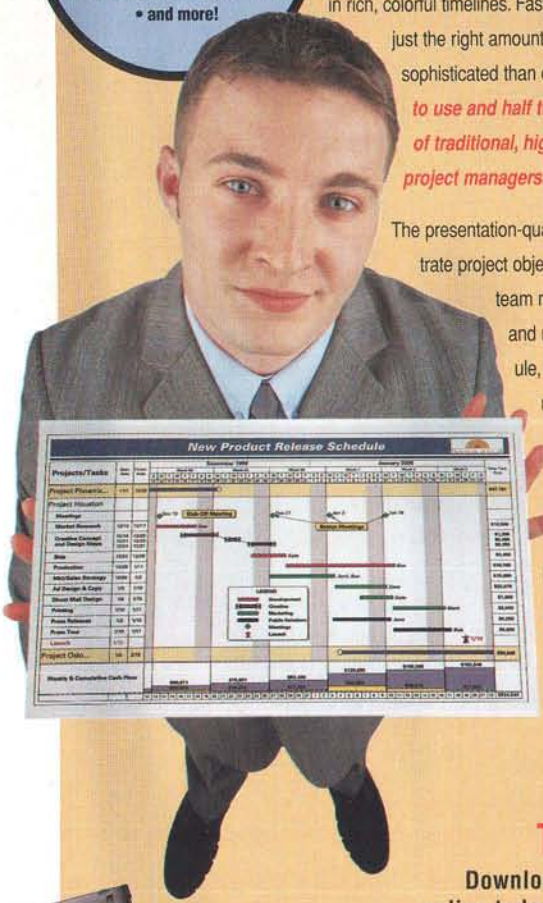


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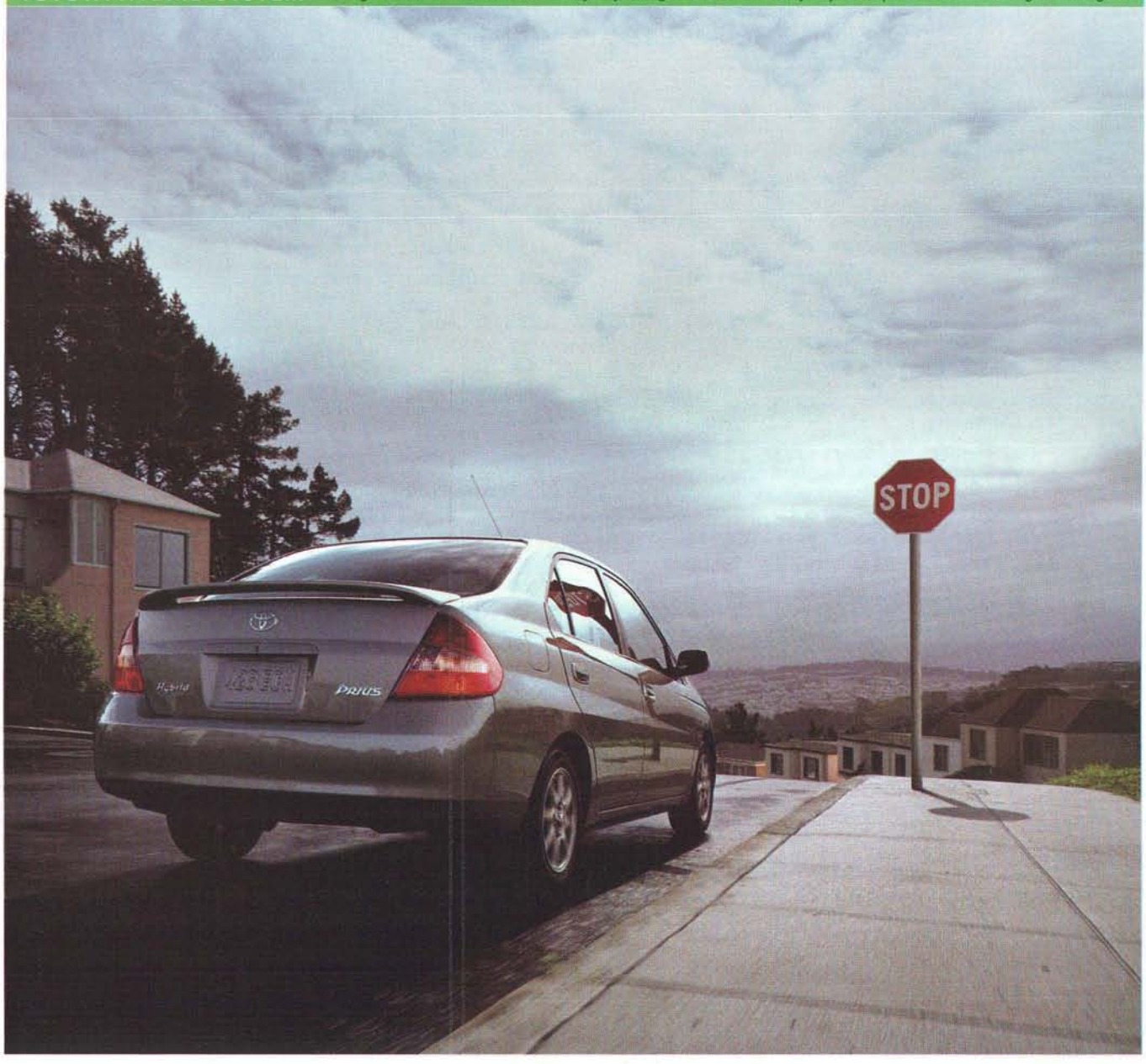


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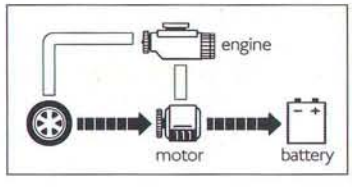


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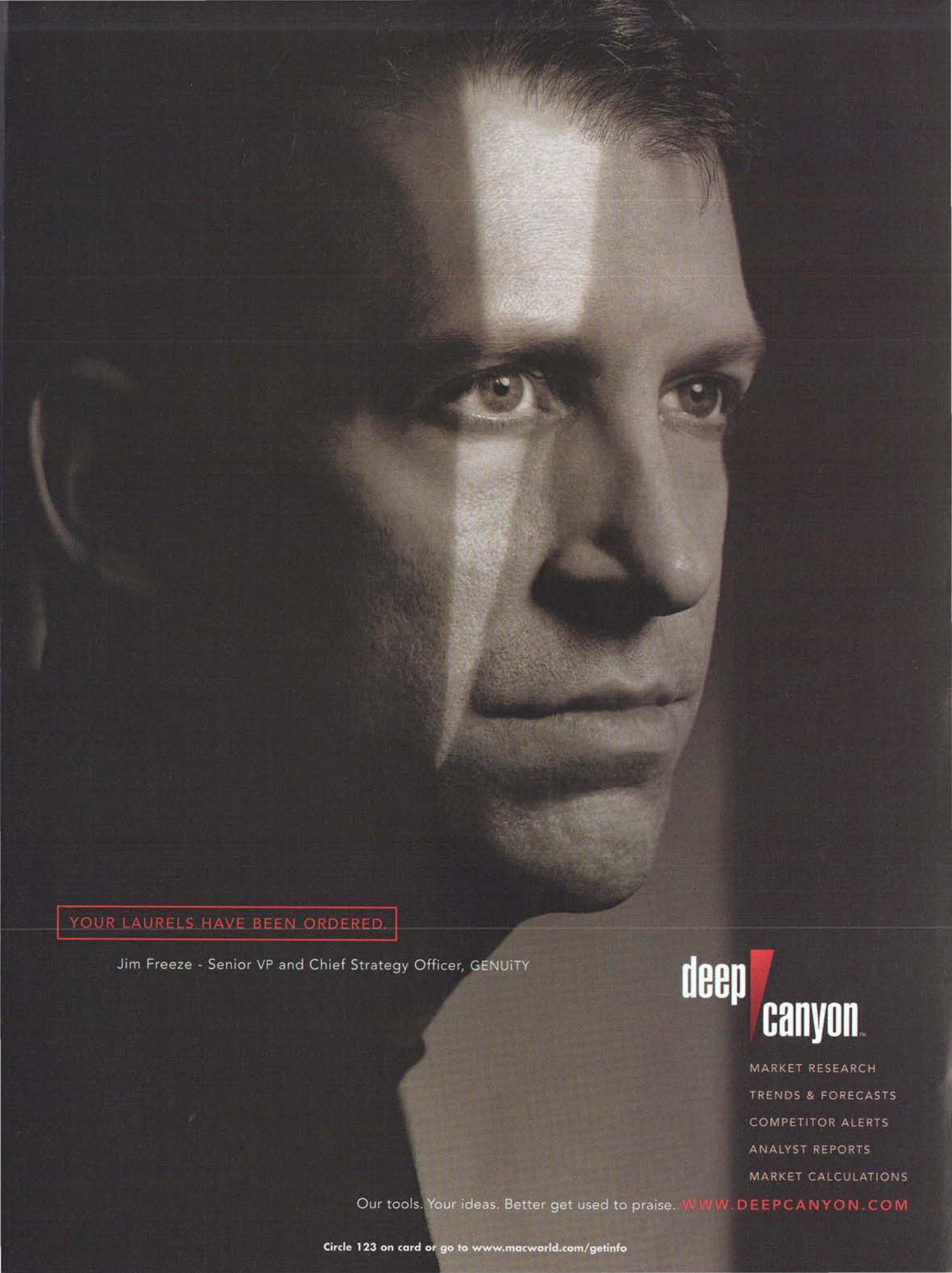


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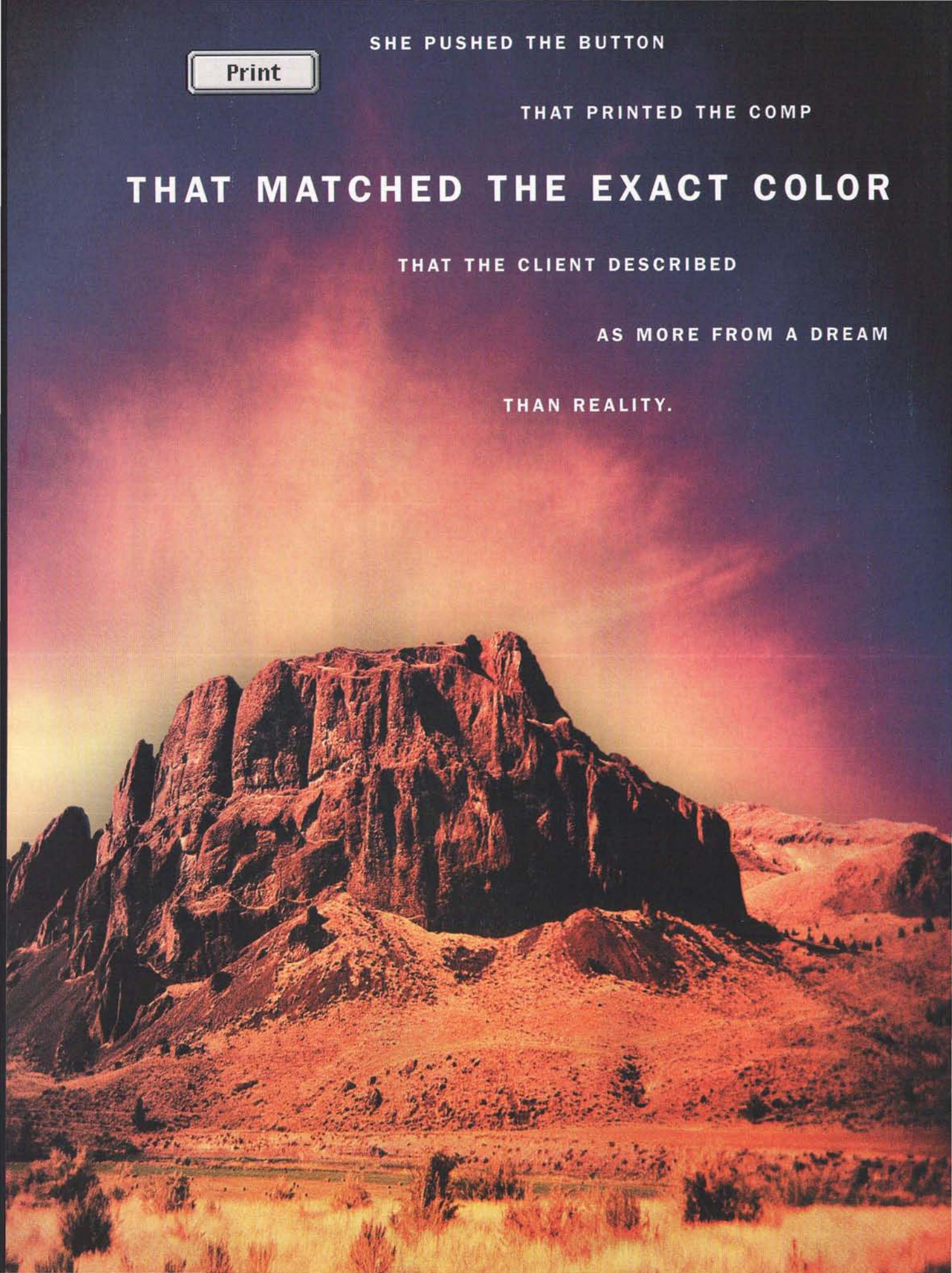
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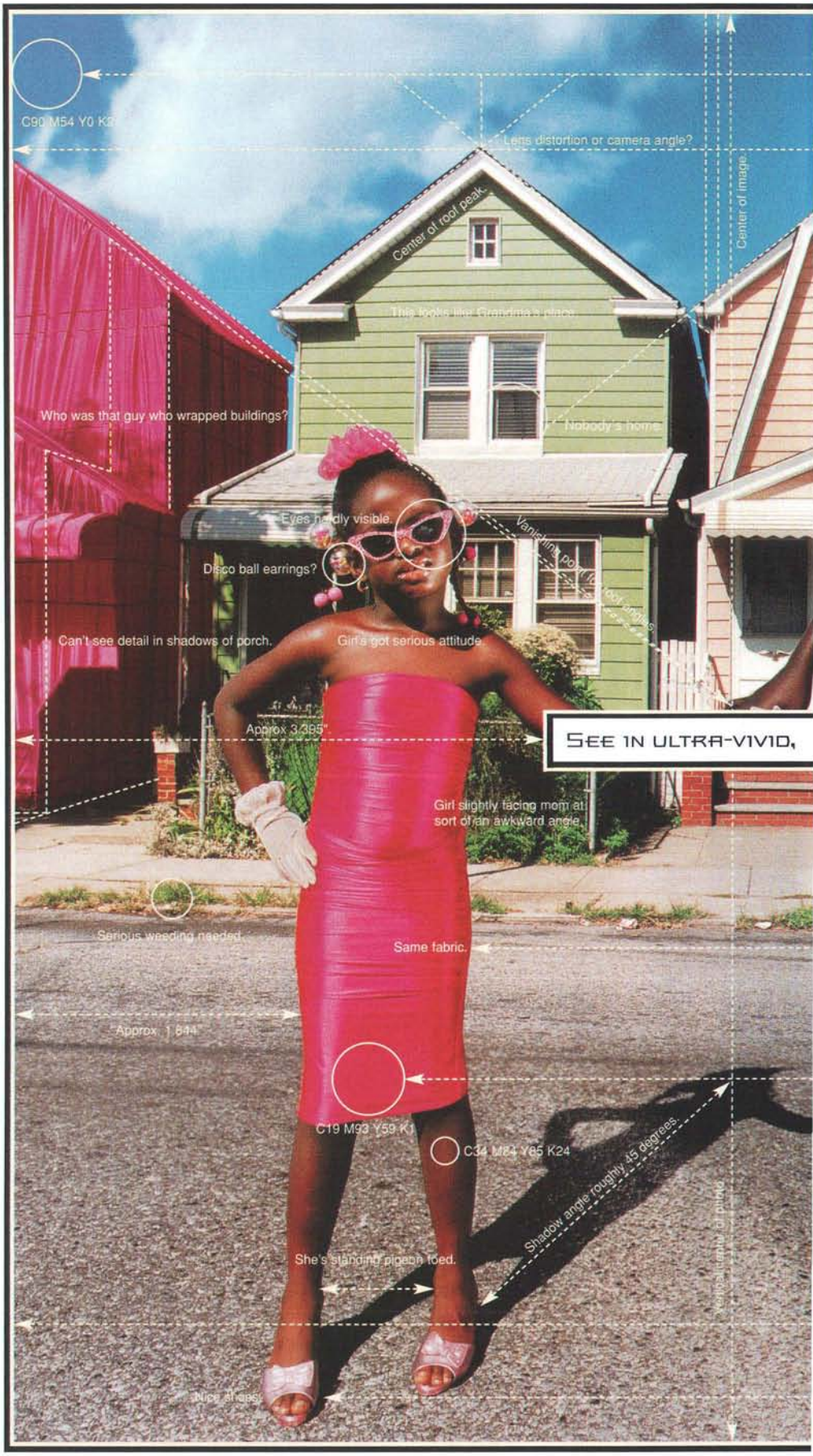


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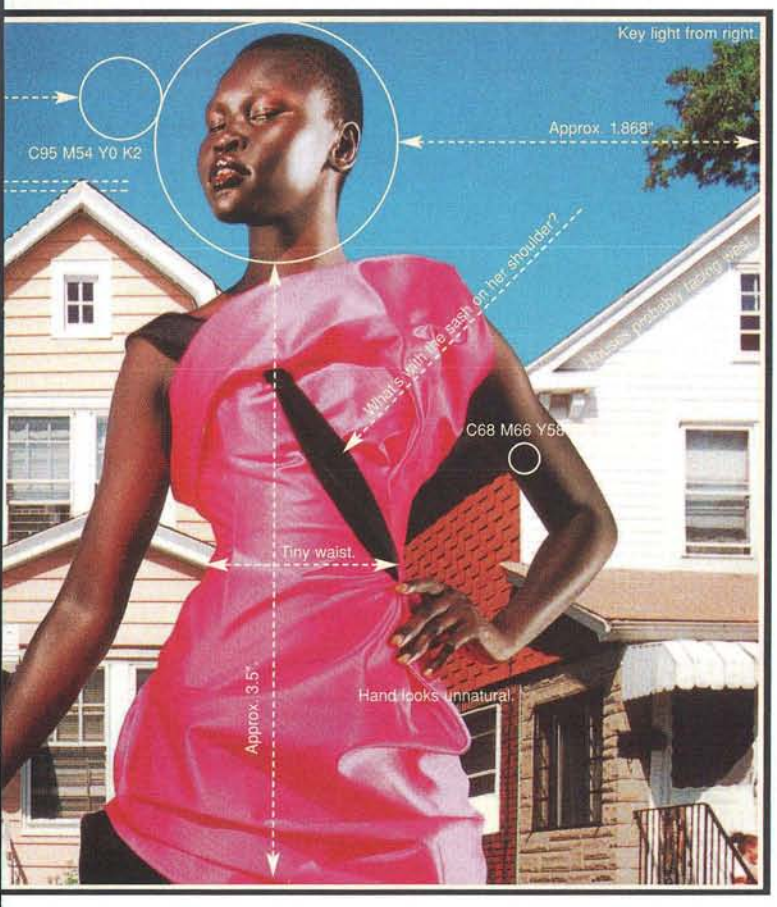


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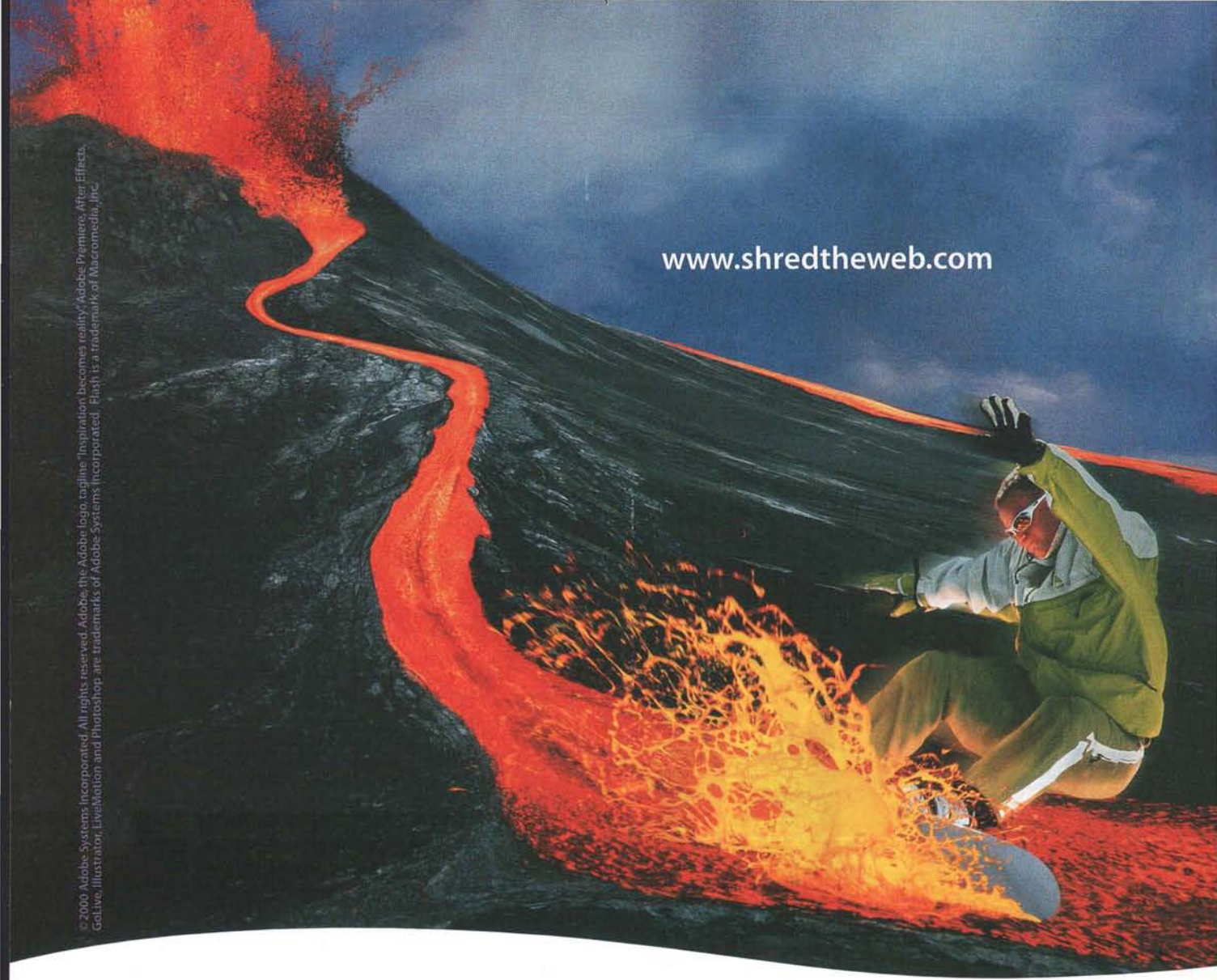


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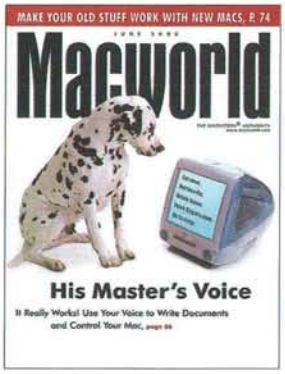


## Computer . . . Write *Macworld*

I was delighted to find such a comprehensive and evenhanded assessment of the state of speech-recognition technology for the Mac ("Listen Up," June 2000). David Pogue did an admirable job of navigating many of the land mines of myth and misinformation that have dotted the Mac speech landscape for years. I was especially glad to see fair coverage of MacSpeech and its ListenDo application.

I've been using PlainTalk, combined with AppleScript, on my trusty Power Mac 7300/180 for years, to give my mouse (and my right wrist) a rest from many repetitive tasks. It's also downright enjoyable to control your Mac with spoken commands, especially when your friends are watching!

So thanks to David Pogue for extolling the virtues of speech technology on the Mac. I plan to get one of the software packages this year, but for now, it's great to start up my Mac and, even if I'm down the hall or in the kitchen, hear "Kathy" say, "Speakable Items is ready!"

**Hunt Sidway**
*Louisville, Kentucky*

Eye am using a new ViaVoice my IBM speech program. It works quite well as you can see by the water. I think you for an Fiat's Stanton article that made by the Senate in. Thanks again Mac World.

**Graham Davis**
*Milford, Michigan*

*I'm happy two here that you are using ViaVoice sucks S fully. I myself use beach-recognition software for Windows, which is at least a generation a head of Max. Queerly, speech recognition is the technology of today and 2 Maura!—David Pogue*

### Power to the PowerBook

For the past month, I've used my PowerBook 2000 (*Reviews*, June 2000) daily; it's fast, quiet, and attractive. But why has no one noticed the absurdity of the AC adapter? The round power adapter may be striking to look at, but it's cumbersome, annoyingly large, and a bit heavy. The adapter is also different from every other PowerBook adapter Apple has used, forcing me to lug around the proprietary cord wherever I go or risk becoming power-less.

**Bill White**
*Goffstown, New Hampshire*

*Only the connector on the end of the cable that goes from the AC outlet to the power adapter has changed. The plug that goes into the back of the PowerBook has remained unchanged for several years, which means you can use power cords from discontinued PowerBook models on Apple's latest portables.—Ed.*

### Sure It's Secure

*Macworld* has taken an oversimplified "Chicken Little" approach to Internet and computer security, and I'm disappointed. The latest example is your review of DoorStop Personal (June 2000). Mel Beckman made a blanket statement that I find untrue: "If you're using a continuous connection, you

*continues*

need a firewall—it's simply not optional in today's dangerous Internet environment."

Mac OS users have always had excellent security right out of the box, not only because Apple chooses not to ship Mac OS with IP File Sharing (in OS 9) or Personal Web Sharing enabled, but also because the OS has no command-line access. There are definitely good uses for firewall products such as DoorStop Personal, but your review barely touches on one of them—controlling access according to client IP address.

Readers should understand that running a server is always a security risk, and they need information to decide for themselves whether a utility is worth its cost.

**Pete Gontier**
*Los Angeles, California*

*Think the Third Little Pig and his brick house, not Chicken Little. Many hacker attacks have nothing to do with careless configuration. Hackers exploit operating-system bugs that lie outside the direct control of end users. Some loopholes, such as the Mac OS 9.0 TCP/IP bug (fixed in January's Open Transport 2.6 update), let hackers coerce an Internet-connected computer into attacking innocent third parties. A firewall prevents arbitrary network traffic from reaching the operating system, drastically reducing the possibility that a hacker can exploit software flaws.—Mel Beckman*

### Gap in the Bridge

Just thought I should mention that the "Port Authority" sidebar in "Bridge the Gap" (June 2000) contains a possible error. I think the labels are flipped on the serial (DB9) and serial (mini-DIN 8) ports.

**Jonadab J. Torres**
*Patterson, New York*

*You're absolutely right. Regrettably, the captions got switched during our editorial process.—Ed.*

## The Feedbag

**I have a comment about the cover of the June issue: too much magenta.**

*This is an unintended side effect of digitally "fixing" dogs.—Ed.*

**I have a Macintosh 6100/60 AV purchased in 1994, and there was not even a mention of options for NuBus Macs in "Bridge the Gap" (June 2000). I guess this means there are no options, but couldn't you at least tell us that?**

*Not even Evel Knievel would dare to bridge that gap.—Ed.*

**ViaVoice is typing words without my saying anything. The house is empty and no radio or television is turned on.**

*If it types "Get out of the house!" I'd take the advice.—Ed.*

**I own a Mac IIsi, and the hard drive has crashed. How large a replacement can I get, and where?**

*As a rule, the older the hardware, the bigger it is. For serious size, consider a drive from the 1970s. An IBM model from 1974 should be roughly the size of your house.—Ed.*

I've just finished reading "Bridge the Gap," and I have a question. The author mentions that a USB connection is slower than a SCSI connection: 1.5 MBps. Later, the author reports the data-transfer rate to be 12 Mbps. Which is correct?

**J. A. Clark**
*Grand Island, Nebraska*

*There are 8 bits in a byte; therefore, a USB connection's speed can be described as either 12 Mbps or 1.5 MBps.—Ed.*

### Forgetting the Little People

Thanks to Jeff Carlson for criticizing Palm's poor Mac support in his Palm IIIc review (*Reviews*, June 2000). I love my Palm, but dang it, Palm Computing should treat us loyal Mac users better.

**Anthony Hornof**
*Eugene, Oregon*

### Parts Is Parts?

Am I mistaken, or was Cisco the dog (cover, June 2000) digitally whacked? I really don't think people are so prudish they'd be offended by something that innocent—except perhaps the uptight editor who forced Cisco to be digitally neutered. For shame!

**Richard Governali**
*Santa Ana, California*

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### CORRECTIONS

Arnold Tiosejo created the photograph that appears in *Macworld*'s review of workgroup printers (*Reviews*, July 2000). **m**

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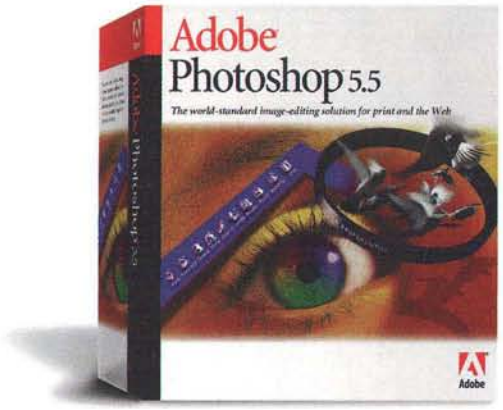


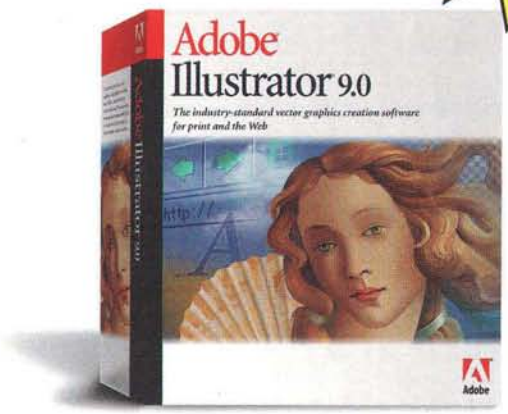


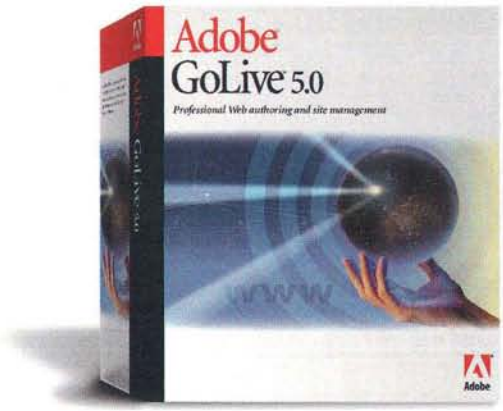


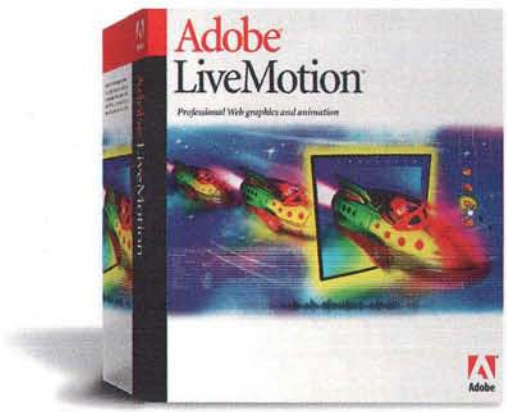


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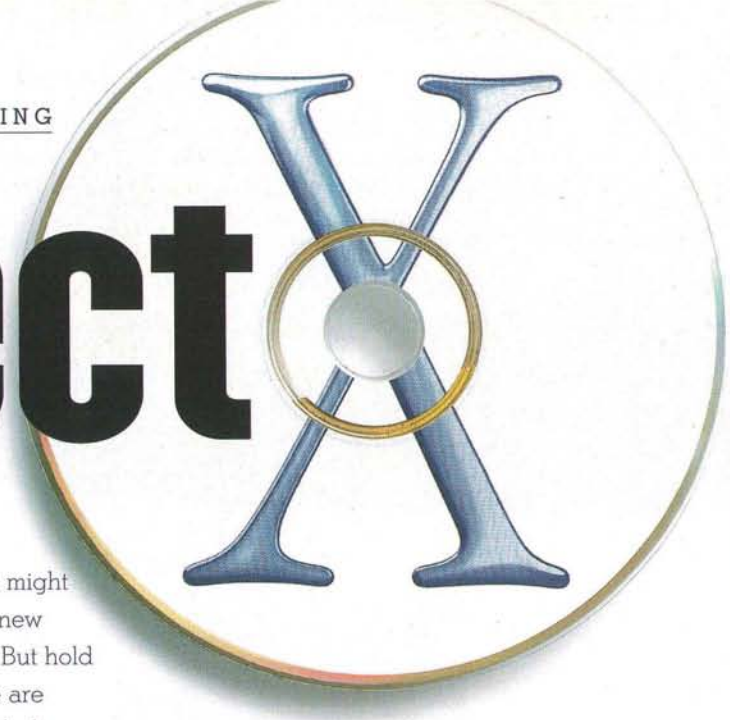

When OS X finally arrives, you might think it's time to put Apple's new operating system to the test. But hold your horses: until the programs you use are updated to run natively in OS X, they'll behave no differently than they do on your Mac today.

An informal survey of key Mac developers indicates that most are finding it easy to make their applications run in the OS X programming environment, known as Carbon. The biggest challenge: waiting for Apple to advance its own OS X work and pass the latest information on to them.

"We just watch what Apple's doing very closely and try to react as quickly as we can," says Brian Yoder, product architect for EarthLink (800/395-8425, www.earthlink.net). Many of the developers we contacted, including EarthLink, praised Apple for the support it has shown developers. But the lack of a firm release date from Apple has made it hard for developers to set their own schedules.

Still, software makers say they're excited by the prospect of retooling applications to take full advantage of a state-of-the-art Mac OS's abilities.

And with the release of a preview version in May, applications that haven't yet become OS X–savvy are closing the gap quickly. At FileMaker (800/325-2747, www.filemaker.com), for example, Development Manager Ken Walters says that programmers got "about 90 percent" of FileMaker Pro up and running within two weeks of receiving the latest developer preview of OS X.

OS X–native applications such as FileMaker Pro will sport OS X's distinctive Aqua interface. If a program crashes, OS X–savvy apps will be insulated. And this new generation of apps take advantage of OS X's modern memory management, so you'll no longer need to fiddle with a program's memory partition if it needs more room. So when OS X arrives, you might want to celebrate. But if you're a hard-core user of a particular program, you should hold off on the funny hats and noisemakers until that app is as ready for OS X as you are.—PHILIP MICHAELS

**"WE JUST WATCH what Apple's doing very closely and try to react as quickly as we can."**

**—Brian Yoder, EarthLink**

PHOTO BY SUZANNE ROADY

BUZZ

News, Views, & Chatter from the World of Macs

THE ROAD TO OS X

# The Long and Winding Road

**If the news that Apple is getting ever closer to releasing OS X has you muttering "We'll see," we can understand your skepticism. Replacing the original Mac OS with a cutting-edge version has been a long process, full of more twists of fate than a Dickens novel and more code names than a CIA operation. And with OS X set to cross the finish line—finally, probably, hopefully—early next year, it's important to remember how we've arrived at where we are today.**

**APRIL 1991** Apple CEO John Sculley demonstrates Pink—Apple's object-oriented OS—to IBM.

**OCTOBER 1991** IBM teams up with Apple to form Taligent, a joint venture that will complete Pink.

**MARCH 1994** Apple announces the Copland OS. Due in 1995, it will feature active assistance, multitasking, and memory protection. An even more advanced OS, Gershwin, will follow in 1996.

**AUGUST 1994** New CEO Michael Spindler says Copland will arrive in 1996.

**JANUARY 1995** Mac enthusiasts gloat. Microsoft delays Windows 95, and gods of karma stroke their chins and take note.

**JUNE 1995** Copland user interface makes its first public appearance.

**SEPTEMBER 1995** Police drummer Stewart Copeland turns 43.

**NOVEMBER 1995** Copland beta goes out to 50 key developers.

**NOVEMBER 1995** Copland's launch delayed until 1997.

**DECEMBER 1995** Long forgotten Taligent becomes a wholly owned subsidiary of IBM. It's never heard from again.

**MAY 1996** A developer release of Copland is expected by summer. But the final version has been pushed back to mid-1997.

**MAY 1996** New CEO Gil Amelio says Apple will ship Copland piecemeal.

**JUNE 1996** Douglas Coupland releases the paperback edition of *Microserfs*, a story about computer programmers searching for their purpose in life.

**JULY 1996** George Gershwin died 59 years ago this month. Doubters of coincidence shrug and eagerly await the new OS.

**AUGUST 1996** Chief Technology Officer Ellen Hancock kills Copland and Gershwin.

**SEPTEMBER 1996** Happy 44th birthday, Stewart Copeland!

**DECEMBER 1996** Apple says its new OS, Rhapsody, will ship to developers in the third quarter of 1997.

**MARCH 1997** Amelio cuts jobs.

**JULY 1997** New interim CEO Steve Jobs cuts out Amelio.

**AUGUST 1997** Mac OS 8 ships without the preemptive multitasking, rewritten microkernel, or protected memory slated for Copland.

**AUGUST 1997** The motion picture *Cop Land* debuts to mixed reviews.

**OCTOBER 1997** Developers get a copy of Rhapsody.

**MAY 1998** Apple changes the name of the OS to OS X.

**SEPTEMBER 1998** Copland may be long forgotten, but Stewart Copeland? Not as he turns 46, that's for sure!

**OCTOBER 1999** As OS 9 debuts, Apple delays the OS X release to early 2000.

**JANUARY 2000** Jobs unveils Aqua and delays the OS X launch until summer.

**MAY 2000** Apple plans a public beta of OS X for summer. Shipment slips to early 2000.

*From Top: Apple CEOs Sculley, Spindler, Amelio, and Jobs*

## FASHIONABLY EARLY

More than 200 developers have signed on to deliver products for Mac OS X. Apple has singled out 16 for their efforts. Think of these companies as fashion trendsetters for OS X. Here's hoping that they arrive at the release date dressed to the nines and not wearing powder-blue tuxedos.—PHILIP MICHAELS

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**More Info:** www.apple.com/macosx

Need more OS X info? Go straight to the horse's mouth—the Web page Apple created to handle OS X queries.

LINKS

ILLUSTRATION BY HARRY CAMPBELL; PHOTOS BY ED CALDWELL (AMELIO) AND BRENT WARD FOR THE *SAN FRANCISCO CHRONICLE* (JOBS)

IF THEY USED MACS...

# Magical History Tour

Those who fail to learn from history must be doomed to make Apple's "Think Different" ads. The award-winning commercials imply that the likes of Jackie Robinson and Albert Einstein would have been card-carrying Mac users—a neat trick, since most of the folks in the company's ads had shuffled off this mortal coil by the time the Mac debuted. But what if a rip in the time-space continuum allowed us to hand out new iBooks to Mohandas Gandhi and Miles Davis? Some interesting tech-support calls, to say the least.—PHILIP MICHAELS

- **THOMAS EDISON**

**DIED:** 1931, 53 years before introduction of the Mac. **FAVORITE HARDWARE:** Power Mac 7300 with a 400MHz G4 upgrade card. **FAVORITE APPLICATION:** SoundJam MP, turned up *really* loud. **MOST LIKELY TO:** Crack open the computer and replace the ROM with a new model made from a wax cylinder. **WHAT HE SAYS:** "Invention is 1 percent inspiration and 99 percent perspiration."—*Sounds like a man who tried using Word 6.*

- **AMELIA EARHART**

**DIED:** 1937, 39 years before the founding of Apple. **FAVORITE HARDWARE:** Tangerine 64MB iBook, for its rugged case and portability on those long transatlantic flights. **FAVORITE APPLICATION:** X-Plane. **MOST LIKELY TO:** Install DeLorme Earthmate GPS Receiver and Street Atlas 6.0 bundle before ill-fated flight around the world. **WHAT SHE SAYS:** "Courage is the price that life extracts for granting peace with yourself."— *And $179.95 is the price of that Earthmate and Street Atlas bundle.*

- **PABLO PICASSO**

**DIED:** 1973, 11 years before installation of MacPaint on the Mac. **FAVORITE HARDWARE:** Blueberry iMac DV during Blue Period. Strawberry iMac during Rose Period. **FAVORITE APPLICATION:** Carrara 1.0, not—as you might suspect—Painter. **MOST LIKELY TO:** Custom-design his own iCards using scenes from *Guernica*. **WHAT HE SAYS:** "Painting is stronger than me; it makes me do what it wants."—*Nowadays they say the same thing about Microsoft*

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## But What I Really Want to Do Is Direct

One movie features seven elderly people living together *Real World*–style. Another recaps the entire plot of *Star Wars* in eight minutes. It's not a film festival gone crazy; it's what you'll find at **iFilm**. With iMovie widely available, iFilm is the perfect destination for Mac users itching to make masterpieces. Besides a multiplex full of flicks, iFilm offers news and interviews. You can even submit your own Best Picture contender. But don't send that movie of your family vacation, Hitchcock. This isn't *America's Funniest Home Videos*.—PHILIP MICHAELS

ILLUSTRATION BY TIM BOWER

COOL STUFF

## DIGITAL CAMERA II: THE SEQUEL

It's not a lunch meeting at Spago that's exciting indy directors. It's a camera—the DCR-VX2000 from Sony (800/222-7669, www.sel.sony.com). This $3,000 mini-DV camcorder packs plenty of wallop for aspiring filmmakers with visions of *Ben Hur* but budgets more like *The Blair Witch Project's*. The VX2000 boasts a redesigned 3-CCD pickup chip set—the signal-processing chips that bolster camera resolution—and a 58mm aspherical lens, which sharpens focus. When you consider its 200,000-color pixel LCD display and FireWire connectivity, the VX2000 seems to do everything—except maybe write your script.—ANTON LINECKER

### Maya for the Mac

When SuperGenius Animation needed to create a 3-D devil for its animated short *Bowlin' fer Souls*, it turned to Maya, a 3-D imaging application from Alias/Wavefront. Starting next year, Mac users will also have that option when Maya hits the platform. Learn more about what Maya means to Mac animators at www.macworld.com/2000/09/buzz/maya.

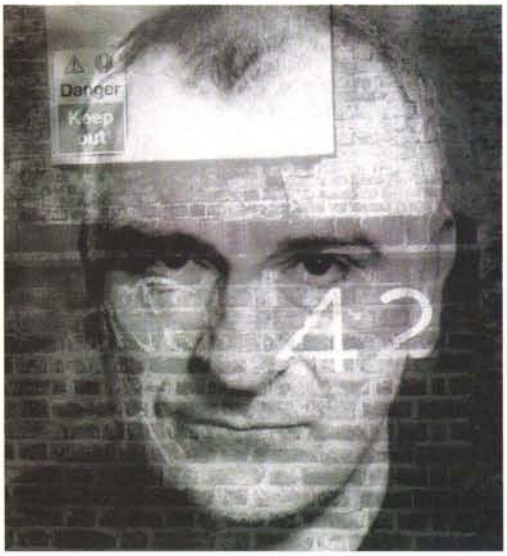
PHOTO BY SUZANNE ROADY, ILLUSTRATION BY ALLEN BREWER

STILL LOOKING FOR LOVE

# Microsoft's Mac Valentine

Mac users enjoy a love-hate relationship with Microsoft—in which *love* is defined as "resigned tolerance" and *hate* as "lava-hot rancor fueled by the fire of a thousand burning suns." Microsoft keeps trying to win Mac hearts, adding goodies to its flagship products. Case in point: the Office 2001 upgrade. Mac users may never embrace Microsoft ... but at least they'll have a lot of new Office tools for writing angry letters to Redmond.

- Entourage 2001, a new personal information manager application for Office, combines e-mail, calendaring, contact management, and a task manager.
- Project Gallery offers customizable document templates for Microsoft Office applications to help users get started faster. Don't need the templates? Office lets you turn off the feature.
- Formatting Palette centralizes Office formatting tools on a single window to simplify common tasks.
- Image Effects adds built-in tools for importing and editing graphics and pictures in Office documents.
- PowerPoint Movies lets you save files as QuickTime movies, and the retooled PowerPoint allows you to incorporate QuickTime transitions into presentations.—PHILIP MICHAELS




*In* The Hitchhiker's Guide to the Galaxy, *Deep Thought, a "stupendous supercomputer the size of a city block," requires 7.5 million years to answer "the ultimate question of life, the universe, and everything." The answer—42—is pretty close to the number of Macs author Douglas Adams has owned. Adams uses his Macs to experiment with interactive fiction and online games. Presumably, his Macs are a bit speedier than Deep Thought.*—ADELIA CELLINI

PRO FILE

# Macs, the Universe, and Everything

## Q&A with DOUGLAS ADAMS

**Q:** ***Just how many Macs do you currently use?***
**A:** My main ones are a PowerBook and a G4 with a Cinema Display. I have an embarrassingly large number of old Macs: some iMacs, a blue-and-white G3. My oldest Mac these days is a 20th Anniversary Mac, which I want to set up for Internet radio.

**Q:** ***Which piece of Mac-related paraphernalia can't you do without?***
**A:** The Cinema Display. It is a stupendous piece of kit. I use Final Draft and Inspiration a lot. And Microsoft Word, I suppose. Also, iMovie has been a bit of a revelation for me, and I'm working my way up the nursery slopes of Final Cut Pro.

**Q:** ***What was it like making your first iMovie?***
**A:** I loved it. I've done a bunch of iMovies since then as well. In fact, I'm going to have to scrub that software off my machine soon, or I'll have too much fun and not do enough work.

> **"MY OLDEST MAC THESE DAYS IS A 20TH ANNIVERSARY MAC, WHICH I WANT TO SET UP FOR INTERNET RADIO."**

**Q:** ***You're an Apple developer. What do you want to create?***
**A:** I want a palmtop Mac, with always-on Internet and GPS.

WEIRD STUFF

## I Shall Call It Mini-Me

Shrink an iMac's size by a factor of 15 and its functionality by a factor of a few thousand, and what do you have? Idea Nuova's (212/643-0680) Super Computer, where *Super* is defined as "LED" and *Computer* is defined as "clock." With a multiyear countdown timer and the inability to run OS X, the $16 Super Computer comes in blue and orange shades just different enough to avoid a call from Apple's lawyers.—GREG KNAUSS

PHOTO BY MARK JOHANN

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# What's HOT

A QUICK LOOK AT THE WORLD OF TECH

1. **Federal Judge Wants to Split Microsoft.** *One company gets control of Windows; the other will control Office, Internet Explorer, and software. Bill Gates, Paul Allen to share custody of Steve Ballmer.*
2. **Napster Faces Lawsuits from Metallica, Dr. Dre.** *Whitesnake wonders why its lawsuit hasn't generated media coverage, fan backlash.*
3. **Steve Jobs Speaks at Macworld Expo in New York.** *CEO thrills crowd with OS X talk, six costume changes, and a rousing rendition of "You'll Never Walk Alone."*
4. **Dot-com Craze Crashes and Burns.** *Old options: 10,000 pre-IPO shares at a $12 strike price. New options: Hamburger Helper or Top Ramen.*
5. **Despite Legal Woes, Bill Gates Still World's Richest Man.** *"It's all a damn popularity contest," fumes disappointed Sultan of Brunei.*

# Product WATCH

**RELEASED**

- Four new scanners from Canon (800/652-2666, www.ccsi.canon.com): The **N650U** and **N656U** weigh about three pounds, boast optical scanning resolutions of 600 by 1,200 dpi, and hit the market in August. Also shipping in August is the **N1220U**, which offers 1,200-by-2,400-dpi resolution. The D660U scanner ships in September. Prices range between $99 for the low-end N650U and $199 for the N1220U.
- iMac upgrade cards from PowerLogix (877/849-2504, www.powerlogix.com): The company will ship two models of its **iForce** processor upgrades, a $299 400MHz G3 with a 512KB backside cache and a $499 500MHz G3 with a 1MB backside cache.
- **OfficeReady Family Essentials** from Canon Software (714/438-3000, www.software.canon.com): The $30 productivity software offers more than 400 templates for Microsoft Word and Excel.

**UPDATED**

- **ViaVoice** by IBM (800/825-5263, www.ibm.com): The $149 **ViaVoice for the Macintosh Enhanced Edition** adds direct dictation into any Mac application, AppleScript support, and a USB-ready headset. It also boasts specialized vocabulary for business and tech documents.

**ANNOUNCED**

- A QuickTime deal between RealNetworks (889/768-3248, www.realnetworks.com) and Apple: RealNetworks will license QuickTime technology for audio and video streaming in **RealServer8**. The deal lets RealServer8 deliver streaming content to QuickTime Players.
- Job cuts at software maker Corel (800/772-6735, www.corel.com): The company—which just bought **Painter, Bryce, Kai's Power Tools,** and **KPT Vector Effects**—will cut 320 jobs, or 21 percent of its workforce.—Compiled by MATHEW HONAN and PHILIP MICHAELS

MAC STUFF

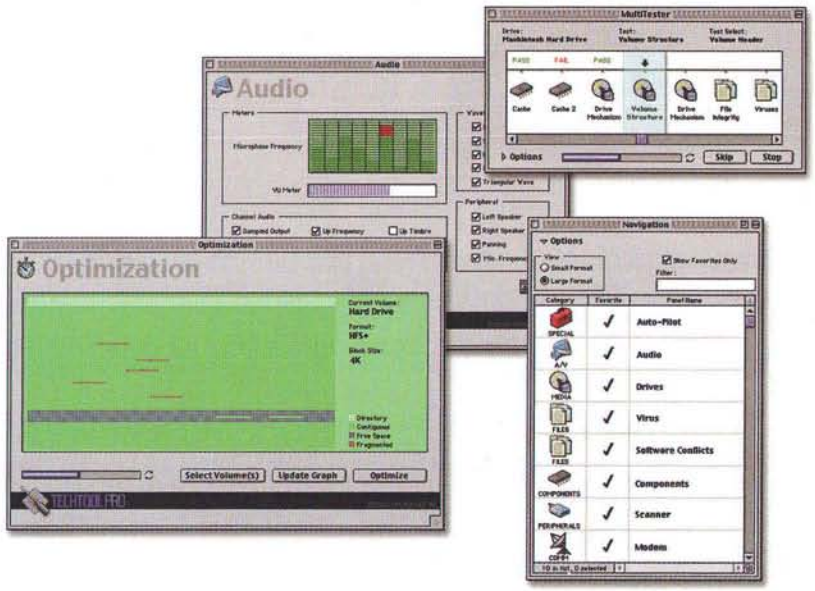
## BLAME IT ON RIO

The next generation of portable cool has arrived. Excessively sleek, the Rio 600 from S3 (800/468-5846, www.riohome.com) is how MP3 players would look if Starfleet got into the consumer electronics business. All gently sloping curves and soothing colors, the 600 inspires pure aesthetic lust in even the most sedate

starship captain. It plays the MP3 and Windows media formats, and you can upgrade to support future formats. You can also boost memory to 372MB. Unfortunately, the $170 Rio 600 ships with an anemic 32MB of memory, enough for an hour of Klingon-quality sound or a measly half-hour of tunes fit for human ears. Looks, brains, play-time: two out of three ain't bad.—GREG KNAUSS

ILLUSTRATIONS BY MARK MATCHO, PHOTO BY KEVIN CANDLAND

# There's only one utility in the world that does more for your Macintosh than TechTool Pro 2...

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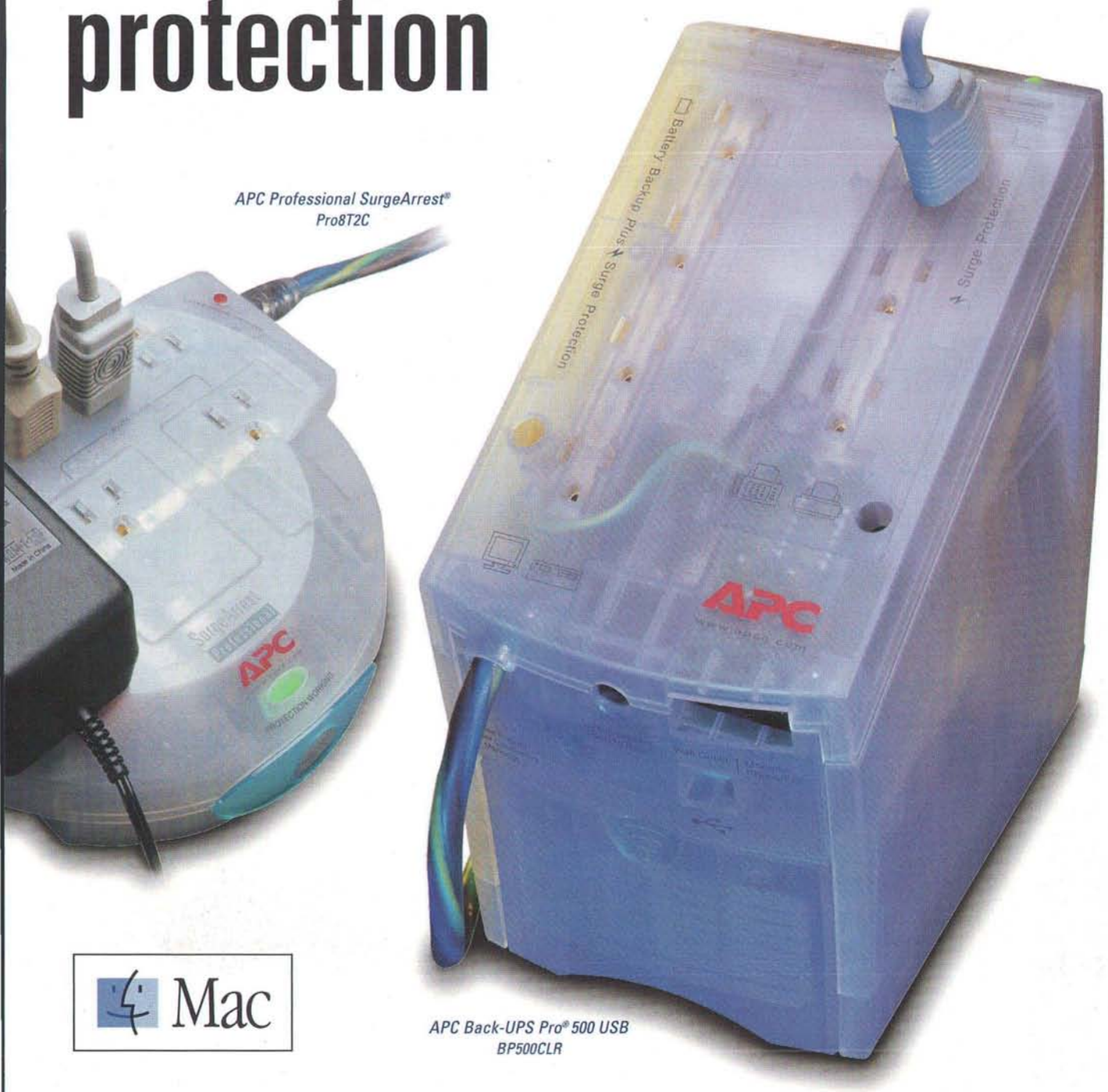


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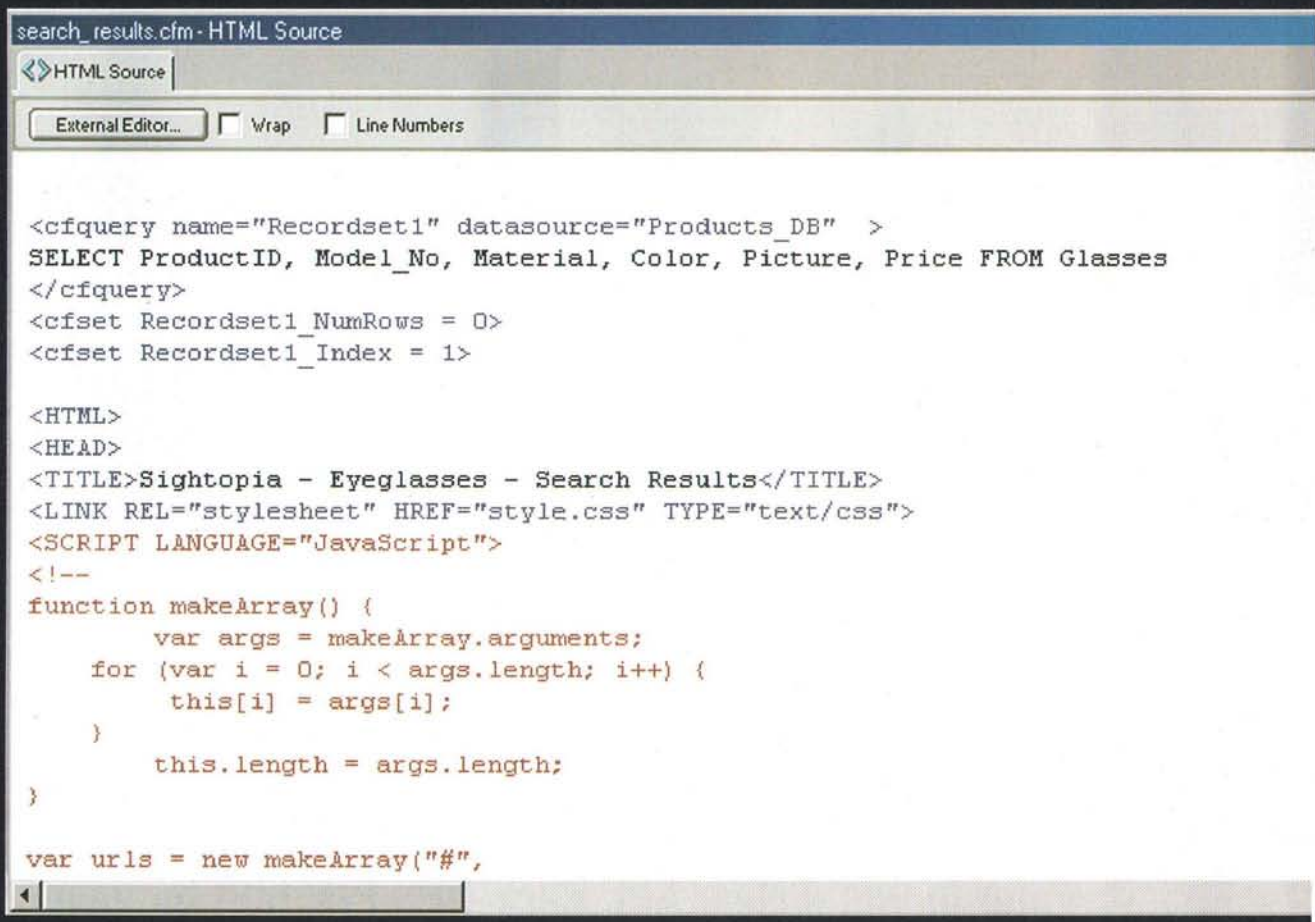


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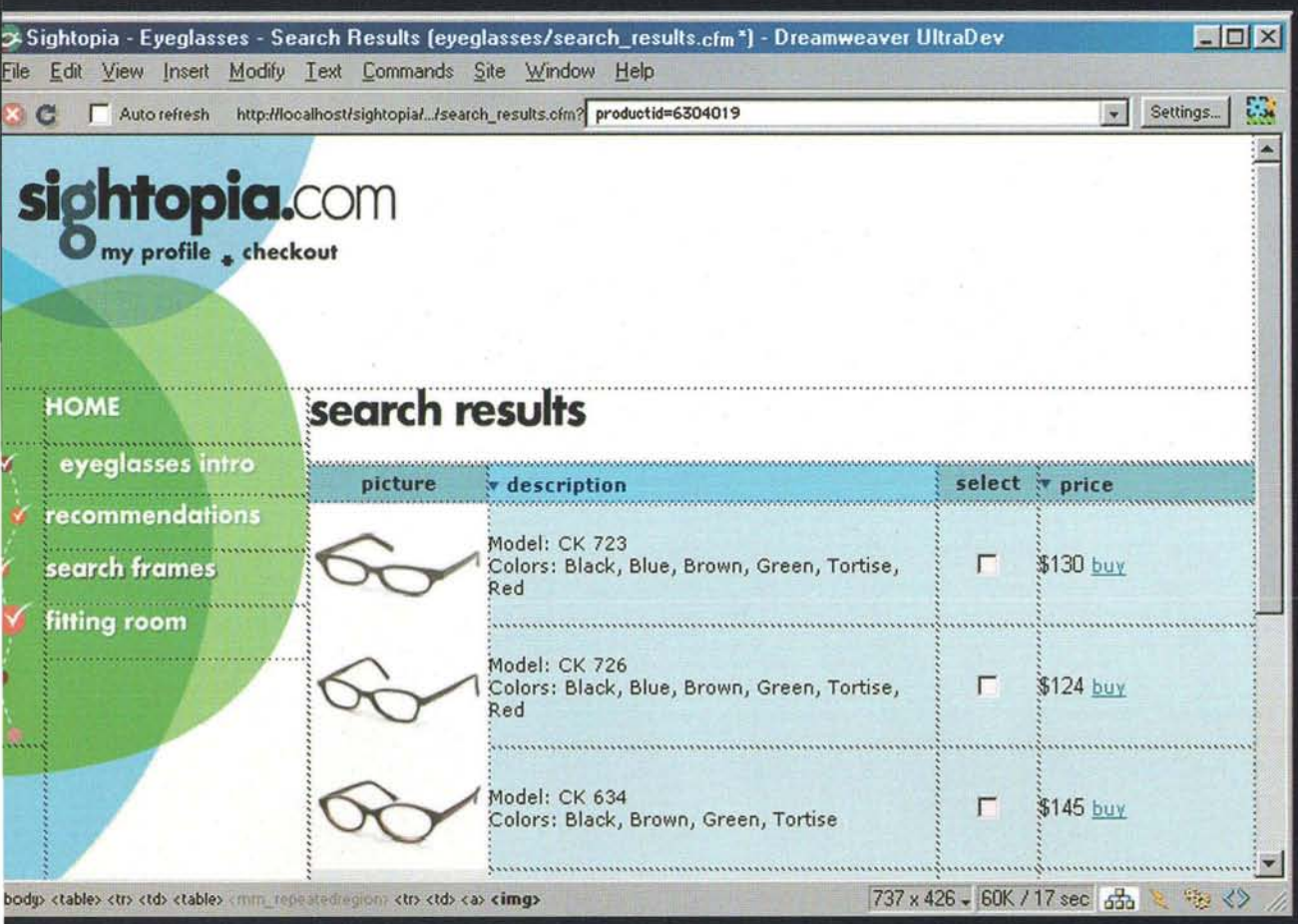


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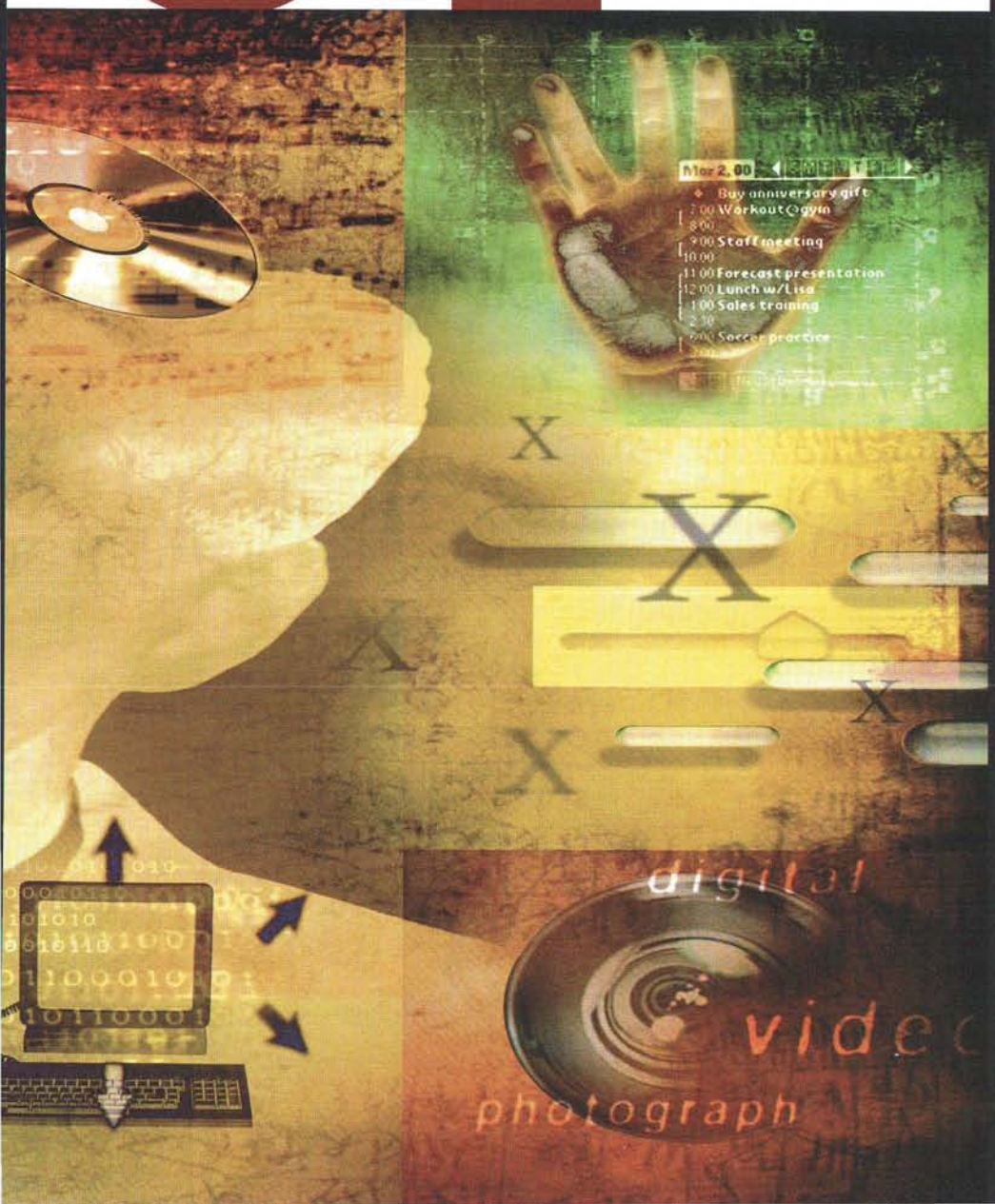



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one

# THE EVOLUTION OF THE INTERFACE

THE YEAR THAT MARC ANDREESSEN AND A GROUP OF STUDENTS WROTE MOSAIC, THE FIRST BROWSER WITH

**by Bruce Tognazzini**

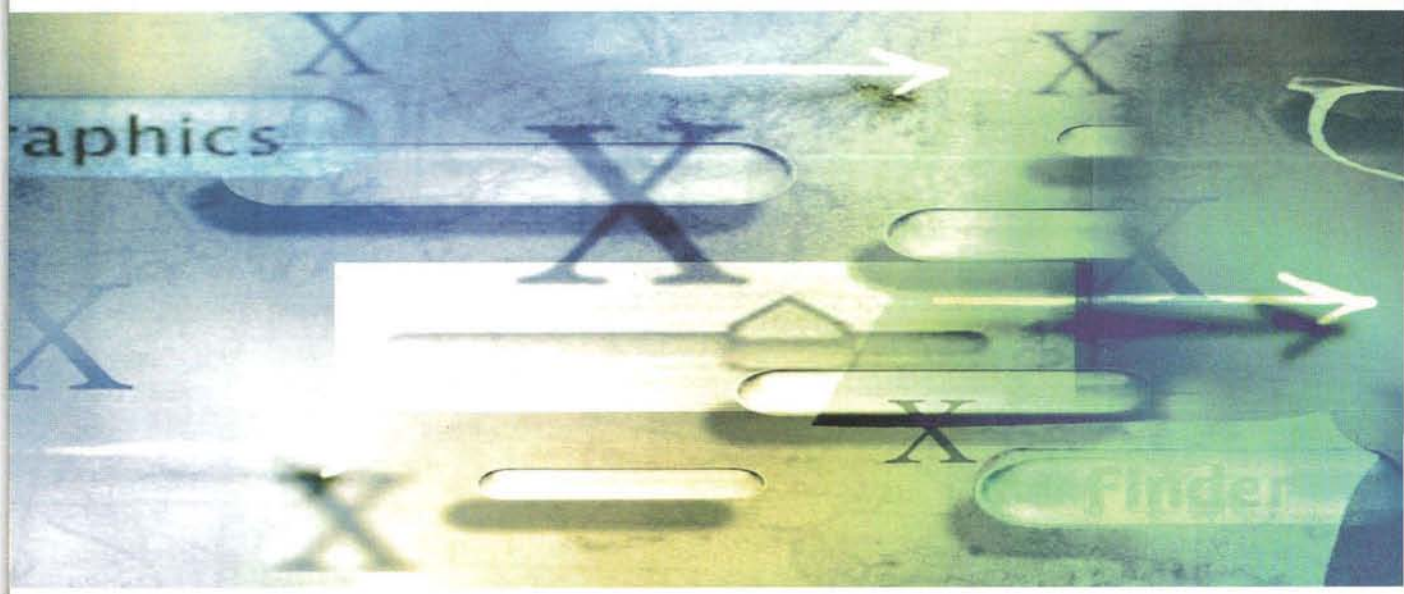
Mac users are in for a big change. OS X heralds a new era in the Macintosh user experience—an era where the Mac is more powerful and reliable than ever before. At the same time, the operating system's flashy new Aqua interface, along with the increasing number of tools that let you change the very underpinnings of the OS, may threaten the Mac's hallmark simplicity.

**The Way We Were** No Mac user would feel any confusion seated in front of a 1984 Macintosh running System 1.0, but most would be surprised at just how primitive the operating system was. Apple hadn't yet even thought of much of what we take for granted on today's Macintosh. In those early days, you could open only one application—including the Finder—at a time.

Even as memory increased, tight integration of applications with each other and with the Finder remained elusive. Our sole tool was the Switcher. This illusion, developed by Andy Hertzfeld, switched between applications by sliding the current one off to the left as the new one slid onto the screen from the right. You could get to any open application by sliding, but only one application at a time appeared on screen.

Then, one fateful day in 1985, shortly after I founded the Apple Human Interface Group, a couple of UC Berkeley kids took the bus down to Apple to show the core Mac team a Mac Plus running MacWrite. We were not impressed. We'd seen MacWrite before. But when they shrank the MacWrite window that filled the screen, suddenly we could see the Finder running beneath. Apple's best and brightest gawked, gasped, and then broke into excited chatter. We'd never thought of such a grand illusion. When the two students returned to Berkeley late that afternoon, it was in the back of a stretch limo, and today's MultiFinder was born.

**The Way We Are** Since that leap, many new objects and behaviors have slowly built up on the Mac—from hierarchical, pop-up, and tab menus to drag and drop—giving us what has been, until now, the simplest, most powerful human-computer interaction system ever made. But now progress more often responds to Microsoft, rather than the other way around. Even today, the company lags in such critical areas as uninstalling applications and memory management.




Mac OS X could accelerate the Mac well beyond the reach of its competition once more. It corrects the single biggest interface problem Mac users have faced from day one: lack of reliability. Apple has, over the

years, given users tools to deal with crashing applications (such as pressing ⌘-option-esc). However, the proper cure is to eliminate the problem in the first place. That's what OS X does. But under OS X, will this reliable computer still really be a *Mac?*

### What Makes a Mac a Mac?

With the Mac, you have always had the power to move around and organize applications and documents in your own virtual space, maintaining a neat or cluttered workspace, as is your habit. Other desktop systems, from Windows to Unix, have depended more on abstraction, forcing users to remember the location of objects in complex hierarchies. In theory, all

of this reduced clutter, but it really only moved the clutter from the visible desktop to the back of your mind. Since most of us work better with visible clutter than with rote memorization, our efficiency drops.

**Taking Away Control** Early releases of OS X threatened to follow the same path, with the Trash Can and all other standard desktop objects thrown into the Dock, where they randomly bounced about as new windows and applications opened. In the last six months, much has turned around, with beta versions of the new OS becoming progressively more Mac-like.

OS X is still missing some important objects, most notably OS 9's tab menus—capable of holding hundreds of clearly labeled items—at the bottom of the screen. The Dock, containing perhaps 20 or 30 icons, has replaced these. It is beautiful to behold, but a drop in bottom-edge storage by several hundred items represents a significant backward step.

In 1985, after a year of finding that pretty but unlabeled icons confused customers, the Apple human interface group took on the motto "A word is worth a thousand pictures." This still holds true. Unfortunately, the labels for Dock icons don't appear until the mouse passes over them. A user looking for one of six Word documents must scrub the mouse back and forth along the length of the Dock until a particular label appears.

**Introducing Abstraction** The Mac has held the advantage for years with its spatially oriented file system. OS X's new File Browser instead brings the power of Web browsers to the local desktop. Unfortunately, the Web and your desktop are not the same thing. On the *Web,* you typically search through millions of Web sites with billions of pages for something you didn't make yourself. A search through your personal machine is quite different—usually you're looking through a smaller number of files created by or collected and organized by you.

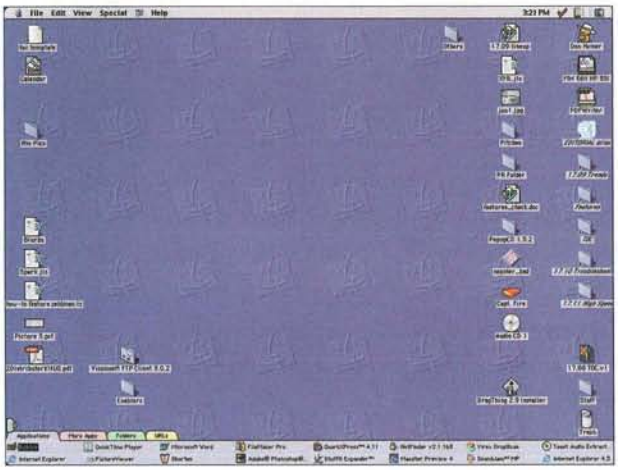
Perhaps the File Browser will find its niche in local area networks, where users may need to traverse large numbers of documents they haven't personally created or collected. However, if I know Mac users, they want to organize their lives in their own ways.

### The Perils of Customization

OS X's interface isn't the only issue at hand. So, too, is its profound gift for customization. Customization can give us the power to make our computers look and act the way we want. But we need look no further than Windows to see how it can be misused.

**Skin Deep** For several years now, Macintosh users have had the ability to customize their Macs, but only at a superficial level. For example, *Skins* are special files

2001: 50.—FORRESTER RESEARCH | PERCENTAGE OF ACTIVE WEB USERS IN DECEMBER 1999 WHO WERE



**The Present** The Mac's free-form Finder and clearly labeled interface have been its hallmarks.

**The Future** From the Dock to the File Browser, Mac OS X's new interface calls into question what makes a Mac a Mac.

that can change the Finder or an application's color scheme and general appearance. Some skins are beautiful, some are hideous, but the most damage they can do is to aesthetics. A few other programs, such as QuicKeys and AppleScript, let us go further to automate particular sequences of events, but we still can't radically change what applications or the OS can do.

OS X provides the hooks that allow third-party developers to affect the user experience profoundly. In the future, you will have direct access all the way down to the Unix Console window (a scary sight indeed)—and you will discover scores of freeware and shareware widgets that change the very underpinnings of the OS and applications. Instead of getting a new skin that makes your system *look* like the latest and greatest Linux interface, for example, you'll probably actually *get* the latest and greatest Linux interface.

The first addenda to the interface to appear will likely erase any perceived strayings from the path of the True Mac in the new OS X interface. This task behind them, the Mac community will start "improving" the interface. Some improvements will be cute but inconsequential. Some will seriously erode the user experience. Others will be as wonderful and astonishing as MultiFinder. With luck, Apple will once again employ a few late-afternoon limos, gathering the coolest ideas into the fold.

**Keeping It Simple** Some wonder if the age of simplicity has passed Apple by. How can an OS as powerful as X possibly regain the sleek elegance of the Apple of old (no matter how flashy the demos)? The simple truth is that an interface is only as sleek as its OS is powerful. The Palm Pilot works because the interface with its relatively limited universe of functionality sits on a computer with significantly more power and storage than even the original Mac. OS X has the horsepower to command and control a far larger universe of activities than we have ever seen on personal computers.

Does Apple still have the talent and the drive to achieve that ultimate simplicity? Will it go down the garden path trod by Microsoft, Sun, and others, building tractors for the masses? Or will OS X live up to its demos and mature into a slippery new sports car? Whether we end up with a Caterpillar or a Porsche, the next year should be an exciting ride.

BRUCE TOGNAZZINI was Apple employee 66. He publishes the software design Webzine AskTog.com.

**More Info:** www.macworld.com/2000/09/features/evolution
www.macspeedzone.com/frames/theXfiles.html

Is Mac OS X evolution or devolution? Share your thoughts with the rest of the Mac community on these forums.

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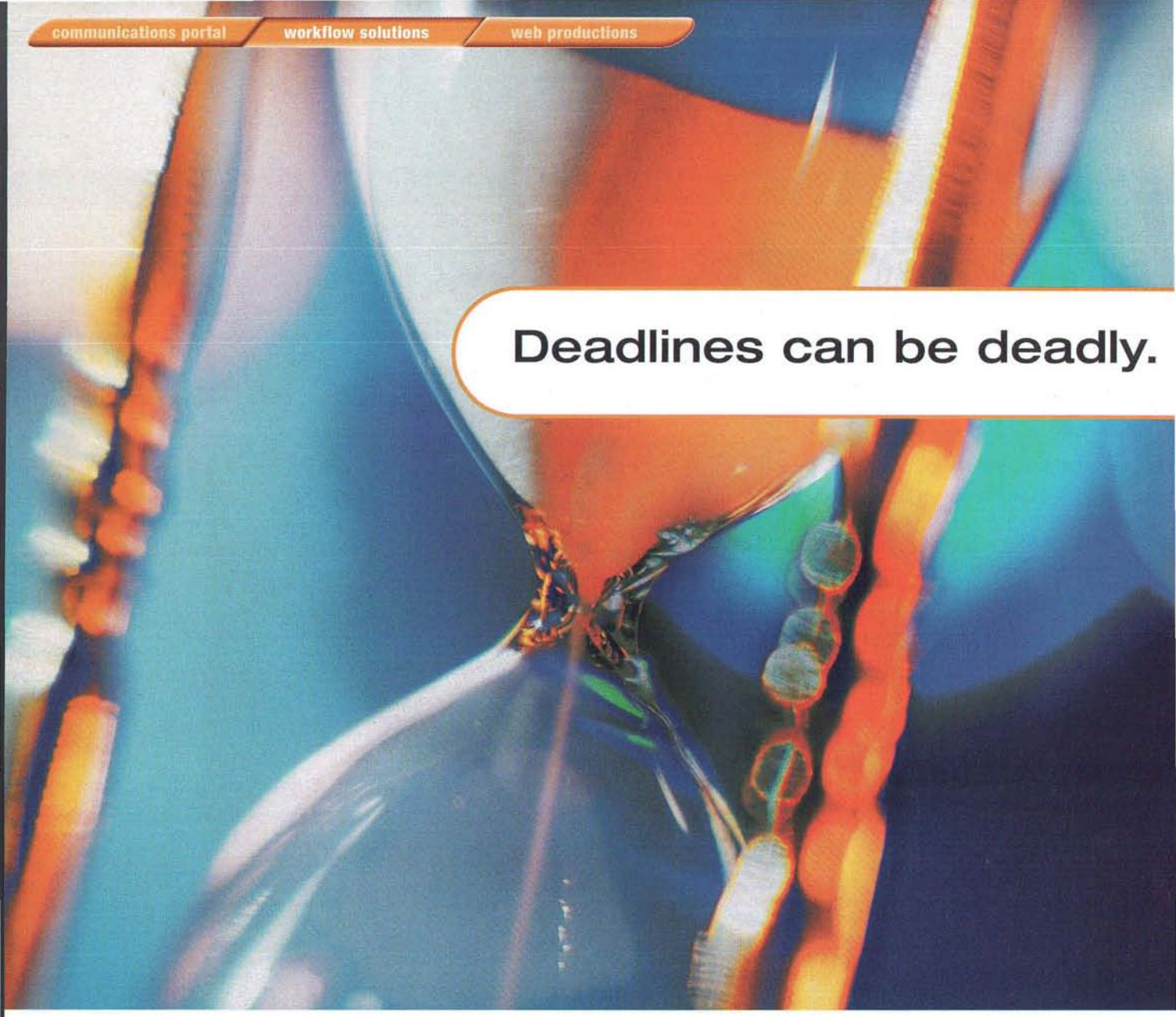

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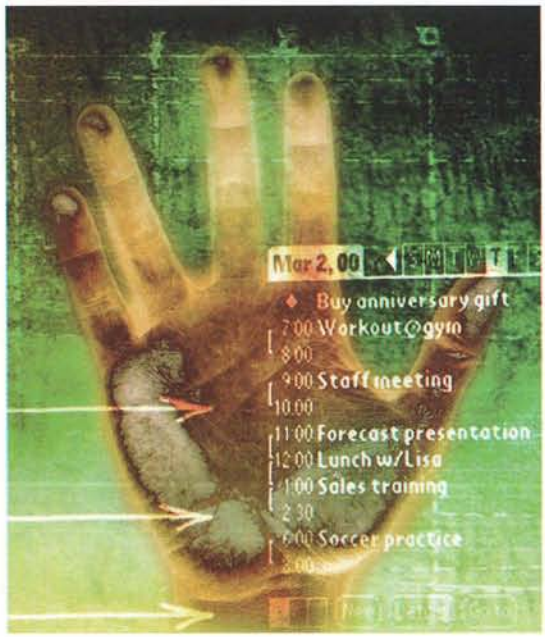
# two THE HIDDEN COMPUTER

WOMEN: 50.—NIELSEN NETRATINGS | NUMBER OF UNITED STATES USERS THAT LOGGED ON TO THE INTERNET WITH

**by Walter S. Mossberg**

It's been 23 years since Apple produced the first successful mass-market personal computer, the Apple II, and 16 years—if you can believe that—since the Macintosh emerged to rock the computing world and set the standard for how all personal computers should work. In all that time, a geologic age in the computing world, the personal computer has been the only way to do most digital tasks—from word processing and playing games to going online.




But the personal computer is an overburdened beast, asked to do so many tasks that it often does them poorly. It's still a relatively expensive purchase, and—even in the case of the Mac—is often needlessly complicated and unreliable.

**The Post-PC Era** So the tectonic plates have now begun to move in earnest under the hardware world, and we have entered the post-PC era: the era of the information appliance, a specialized computer optimized and tailored to do a limited number of digital tasks—very well, very simply, and very inexpensively. The industry is unleashing an abundance of new digital devices—wired and wireless, handheld and stationary—to complement the personal computer, and in some scenarios, to replace it. Because of their simplicity and cost, these devices will help bring the Internet to the 50 percent of U.S. households that Forrester Research predicts still won't have Internet access in 2001. But they'll go way beyond that. People with Macs and other PCs will also own one or more appliances to perform various tasks better.

**Not Another Newton** Mac veterans will recall having heard such predictions before. After all, the prophesied Newton revolution never happened. The Pippin and the eMate, which were supposed to replace PCs in some homes and schools, flopped. Even the Palm Pilot and the Sony PlayStation haven't knocked off the PC.

This time, however, it's different, and the key to that difference is the Internet. The Internet changes everything. Increasingly, people focus on *what's online*, not on which kind of box gets them there. Most people still think of the Internet as a specific service you access from a PC. But the Internet is destined to become more like the electrical grid—it'll be everywhere, all around us, pumping out content, commerce, and entertainment from sockets all over the place to a wide variety of devices.

**The Future Is Now** You can already buy things such as the $449 Palm VII, which receives Internet content wirelessly, or the $99 i-Opener, nothing more than a browser and an e-mail client in a sleek hardware container. This summer, America Online will roll out AOL TV, which will not only let you fetch Web pages—it will also blend TV and the Internet. You'll be able to send and receive e-mail and instant messages right from the TV screen.

Microsoft has joined with a number of hardware makers to produce the Web Companion, a forthcoming $199 device that hosts the company's MSN online service and through that service the entire Web and e-mail. (Microsoft has also quietly dropped any reference to the personal computer from its mission statement.) Several companies will soon be offering wireless Web pads, tablets you can carry around the house while browsing.

Others are rolling out Internet-connected stereo components, and I don't mean just MP3 players. These full-fledged stereo components download, store, and play thousands of MP3 tunes (or other digital music files) and don't rely at all on a PC. You'll also see e-books that

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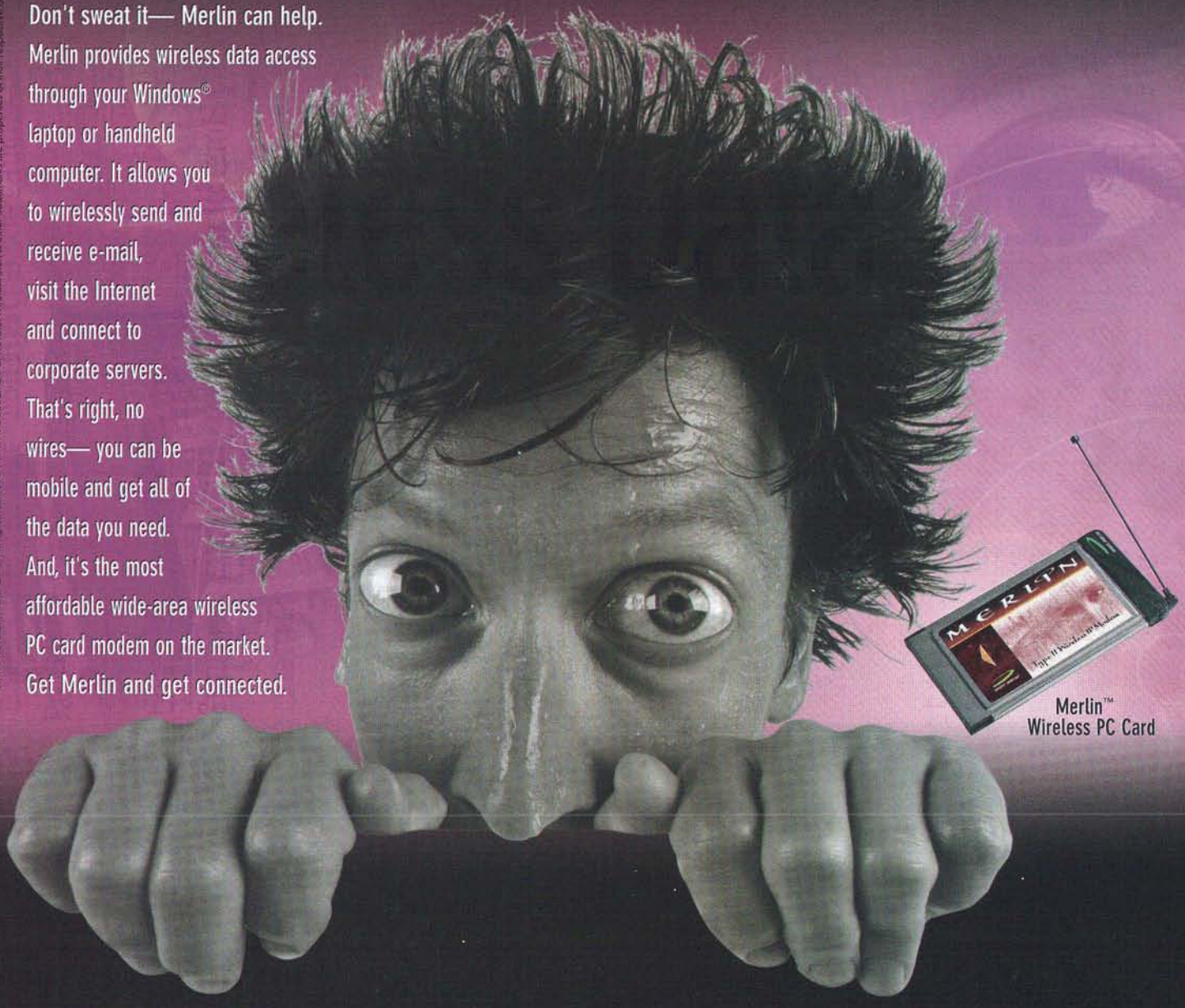


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connect directly to the Net to download best-sellers, as well as a staggering number of telephone-based Internet access gadgets. You'll also be able to give a picture frame to your Mom that taps into a custom Web site and downloads whatever pictures you want her to see.

**The PC's Place** So how will this affect your relationship with your beloved Mac? Well, the Mac, and the PC in general, will still be the most versatile and complete Internet access device. And the Mac will remain the device of choice for content creation and for programming. In fact, at least in the short run, the appliance trend will enhance the Mac's value for content creators. If you're doing Web authoring, you'll need the power of the Mac to repurpose your Web content for all these new platforms.

But, over time, many typical online tasks will become speedier and easier on appliances, if only because you'll have the appliances closer at hand, in more rooms of your house and right in your pocket or purse.

So hold on to your Macs. Ride the wave of OS X and whatever the Web dishes out for the computer. But be prepared for a whole new world of digital devices, a world that should be as exciting as the Mac itself.

WALT MOSSBERG is the author of the widely read "Personal Technology" column in the *Wall Street Journal*.

**by John Markoff**

A little more than a decade ago, while I was on a visit to now long-since-failed supercomputer maker Kendall Square Research (KSR), it became clear to me that the world of computing had been turned completely upside down. KSR was one of a handful of computer companies emblematic of the "big iron" era of computing. A single computer could consume as much power as a small city and cost as much as $30 million. Computing technology in that era trickled down from large military and corporate computing projects until—years later—it finally appeared in desktop personal computers.

One look at the heart of the KSR machine, however, revealed a very different reality. The custom microprocessor at the heart of each of its dozens of computing modules was manufactured in Japan—on the same production line that made the chips inside each $300 Sharp Wizard calculator and organizer. All of a sudden, technology was trickling *up*. The world of big computing had started to become dependent on the infrastructure developed for inexpensive consumer electronics.

**Desktop Supercomputers** Today this inversion is the norm. Not long ago, for example, researchers at NASA Ames Research Center received their first order of

**My, How You've Grown: Apple Computers through the Years**

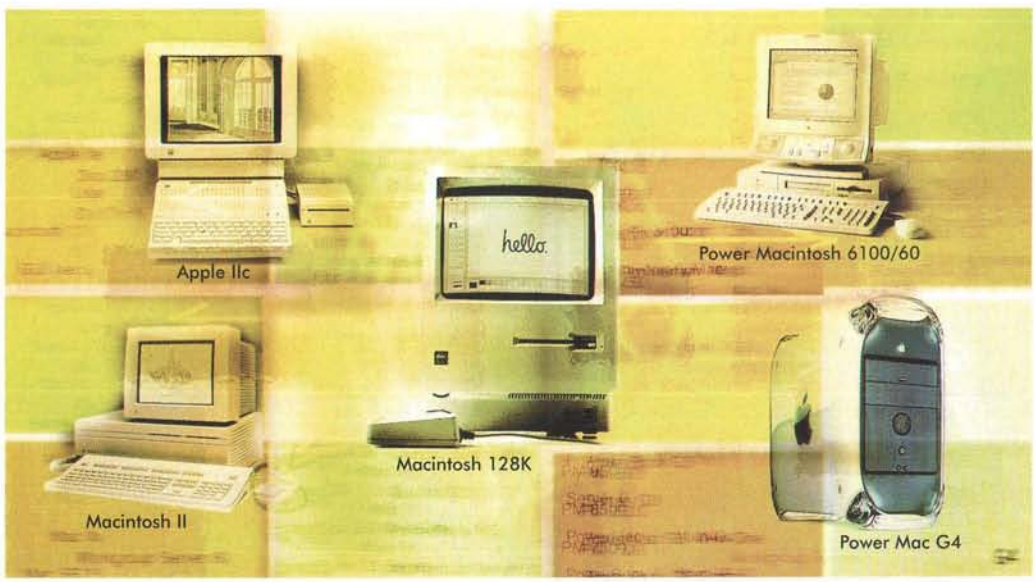
**1984 Apple IIc**
**Processor:** 65C02, 1.4MHz.
**Hard Drive:** None. **RAM:** 128K.

**1984 Macintosh 128**
**Processor:** 68000, 8MHz.
**Hard Drive:** None. **RAM:** 128K.
**Price:** $2,495.

**1987 Macintosh II**
**Processor:** 68020, 16MHz.
**Hard Drive:** 40MB SCSI. **RAM:** 1MB.
**Price:** $5,498.

**1994 Power Macintosh 6100/60**
**Processor:** 601, 60MHz.
**Hard Drive:** 160MB SCSI. **RAM:** 8MB.
**Price:** $1,700.

**1999 Power Mac G4**
**Processor:** G4; 350, 400MHz.
**Hard Drive:** 10GB SCSI. **RAM:** 64MB.
**Price:** $1,599.




MEGAN GREENE

Power Mac G4s. They quickly ported a number of scientific programs to the new machines to benchmark performance. They wanted to find out if the 128-bit-wide registers provided by the AltiVec extensions to the G4 chip would be useful for scientific calculations. What they found is that the $4,000 G4 easily matched the performance of a $30 million 1985-vintage Cray II for raw computing performance. In a decade and a half, the cost of processing had fallen almost four orders of magnitude.

Of course, it doesn't stop there. With the advent later this year of the Sony PlayStation 2—the $300 gaming console that will have more power than today's Intel-based PCs—it will indeed be possible to make two unequivocal statements: First, in the future the cheapest computers will be the fastest. And second, the companies that make the fastest computers will be the ones that make things to go under Christmas trees.

### Moore's Law Hits Home

The computing inversion is the logical consequence of Moore's Law. By this time, many of us are acquainted with the observation made by Intel's cofounder Gordon Moore in the mid-1960s: Every 18 months the number of transistors that can be etched on a given area of silicon doubles. This has meant that, with brutal efficiency, the cost of computing has continued to fall while power has increased. So brace yourself.

In the short space of the next year, the processing power of a PowerPC G4 will more than double—an increase that will match the progress made in the last 20 years of computing. And the year after that, it will double again! My first computer, purchased in 1981, was an 8MHz IBM PC; almost two decades later I'm writing this on a PowerBook G3 that has roughly 40 times its processing power. Next year the Mac I write with will almost certainly have twice as much speed, consume less power, cost less, and look better.

**New Power, New Possibilities** What does the fact that processing power is heading into the stratosphere while costs dwindle imply? Historically it has meant that with remarkable regularity, Silicon Valley has spun off entire new industries with each stair step in processing power: digital watches, video games, personal computers, the Internet, mobile phones, and PDAs.

Not that it's predictable. What is perhaps most delicious about Moore's Law is the regularity with which the pundits and executive "visionaries" stumble in their predictions about what the next big thing will be. In the early 1990s Silicon Valley bet big and guessed wrong on interactive television. Several years later in *The Road Ahead* William Gates largely missed the rise of the Internet.

Now the next big bet is on wireless handheld computing. But no one is certain how and when that world will emerge. If wireless does take off, it will happen because new systems that allow people to access the Internet by voice from their cell phones will expand the power of the Internet far beyond the 25 percent of Americans who are connected. Already, systems such as Tellme (www.tellme.com) in Silicon Valley are opening up the Internet to cell-phone users. Users can get news, receive driving instructions, and make restaurant reservations all by using voice with a remote computer system.

But try to guess what's next? It's a fool's game. For, as remarkable as Moore's Law is, processing power is now actually the laggard compared with the accelerating power of both magnetic data storage and optical-fiber communications. Just one example: in 1981, a 10MB hard drive cost approximately $1000. Now you can buy a 10GB drive for about $100. These technologies are now improving at a rate that makes Moore's Law seem pedestrian. Put it all together, and the world as we know it is certain to be turned upside down again.

JOHN MARKOFF is a senior writer for the *New York Times* in San Francisco. He is a coauthor of *Takedown* (Warner Books, 1996).

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# THE NEW MAC OS

MARKET WILL BE NEARLY 30 MILLION HOUSEHOLDS AND PRODUCE ALMOST $10 BILLION IN YEARLY REVENUES.—JUPITER

**by Philip Michaels**

You've been hearing about it for years now. Apple's next-generation operating system, OS X, is going to change the way you use your Macintosh forever. At last, the Mac will have a fully modern operating system. Preemptive multitasking! Protected memory! Powerful graphics! And a whole new set of souped-up applications designed specifically to take advantage of OS X's improved speed and stability.

"Great," you say, "but I've heard all this before. Just tell me when the OS will be ready."

"Soon," Apple says.

"How soon?" you say.

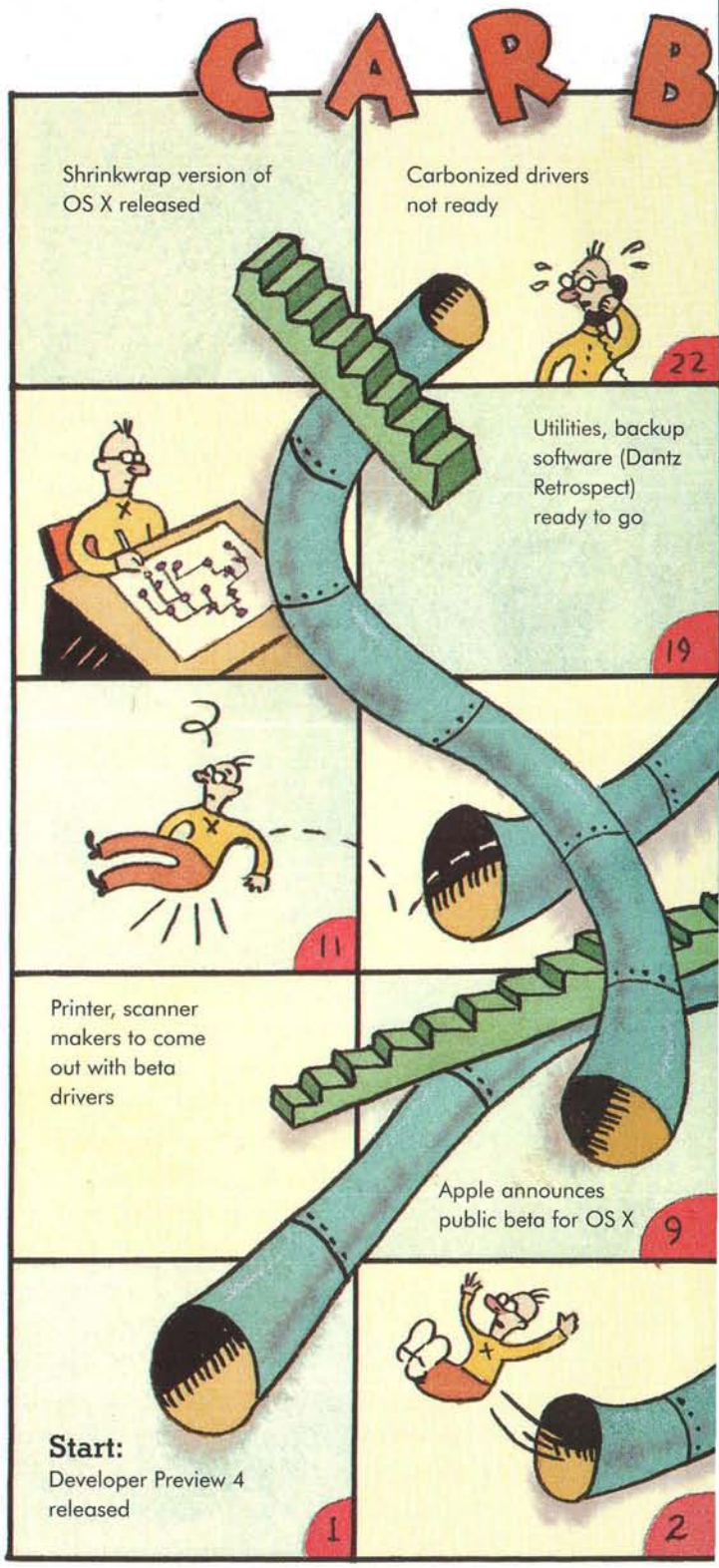
"*Very* soon," Apple says.

It's easy to become jaded by the hype, but don't be too skeptical. OS X *is* just around the corner, and it *will*. radically affect your Mac experience. But things don't always go according to plan. Delays crop up. And when it comes to developing something as labor-intensive as an entirely new operating system, one delay can have a domino effect.

Want to understand the tortuous process of producing an entirely new OS? Think of your favorite childhood board game. Do something good, and you get to jump ahead several spaces toward the finish line. Make a mistake, and you slide back to square one. The road to OS X will work much the same way.

With that in mind, we proudly present the game Carbonland. Feel free to play it with family and friends as you while away the next few months, waiting for Mac OS X to make its early 2001 shipping date.

Carbonland was developed by Associate Editors PHILIP MICHAELS and MATHEW HONAN, and Editor in Chief ANDREW GORE.

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Get the most up-to-date information on OS X's progress, and share your opinion of it in the Macworld.com forums.

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Illustration by Marc Rosenthal



# ONLAND

Major Mac developers (FileMaker, Intuit) delay Mac OS X releases

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Key applications such as Microsoft Office yet to be carbonized

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**Finish:** OS X preinstalled on Macs!

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GIL GRAPE

TEVANIAN TANGERINE

LISA LIME

BONDI BLUEBERRY

STEVE STRAWBERRY

five

# THE PERSONAL IMAGING REVOLUTION

A JUMP OF MORE THAN 60 PERCENT. —IDC | 77 PERCENT OF PEOPLE UNDER THE AGE OF 20 SAY SOMEONE IN THEI

**by Deke McClelland**

MEGAN GREENE

My earliest experience with a digital camera was on a discount cruise bound from Miami to the Bahamas and back again. I might have looked like just another idiot in Bermuda shorts and a sunburn, but I was the only guy on the ship capturing 640-by-480-pixel images with the first full-color digital camera priced under $10,000, Apple's QuickTake 100.

Sure, I had to dash back to my cabin every 16 pictures to download images via a slow serial connection, and my gray-scale PowerBook had too little memory to open so much as a single image. But who cared? This was 1994, a time when only the rich could afford desk-bound, flat-page scanners, yet I was armed with a device that let me set sail and scan the world.

**Bye-bye Film** As fortune would have it, I haven't developed so much as a single roll of film since. It wasn't that the QuickTake was so phenomenal—in truth, its poor framing and gummy focus made for some pretty rotten pictures. But the simple fact that I never again had to go all the way to a photo lab was reason enough for me. I took the pictures and reviewed my shots, and once I'd purchased some more RAM, I learned immediately from my mistakes. How could I help but be entranced?

It seems I wasn't the only one. Despite the fact that 35mm film continues to offer better image quality—and may do so for a few years to come—the immediacy and flexibility digital photography affords have attracted buyers in droves. U.S. shipments of digital cameras doubled from 1997 to 1998, and tripled from 1998 to 1999.

Film cameras remain substantially more popular, but if current trends continue, you'll have a hard time finding a consumer film camera by the end of this decade. Olympus, the best-selling camera vendor worldwide, claims that thanks to its higher prices—a new digital camera costs on average $494, compared with less than $100 for a film camera—the company expects to earn more next year from digital cameras than from film models. As this continues, infrastructure for consumer-grade film will wither and die.

**Instant Gratification** Even now, people can't resist the urge to digitize. With scanner prices dropping below $100—in some cases $30 or less after rebates—desktop scanners are becoming standard equipment in dens and basements across the country. Last year, consumer scanner sales reached 8.3 million units, compared with a scant 1 million just three years earlier. Only a few consumer-grade scanners can capture the full resolution of film, and almost none do a decent job of scanning 35mm slides. But for most folks, quality is quite beside the point. The attraction of electronic imaging is that it permits us to capture and share photographs without constraint.

Who cares if the image exhibits compression artifacts or measures the size of a postage stamp? For the first time in our lives, we can communicate visually to anyone on the planet with the event still fresh in our minds. With a simple JPEG file, we share an intimate vision of ourselves that often transcends the spoken or written word. By sharing what I see, I show who I am.

Electronic imaging ensures that no experience in our lives escapes our ability to convey it to others. Recently,

**More Info:** www.macworld.com/2000/09/features/imaging

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Want to join the revolution? Go to Macworld.com for tips, techniques, and the most recent reviews of inexpensive color printers and digital cameras.

when I e-mailed a sonogram of what promises to be my first son, the infinite potential of consumer imaging struck me. Here was a picture captured at great expense inside a human body, stored in who-knows-what format on some proprietary system. But because the doctor was able to print the image on photographic paper, I could scan it into my system and deliver it to friends and family just as if I had taken it myself.

The personal imaging revolution is by no means over. Companies have a way to go before they're through improving image quality, refining color accuracy, or introducing technologies that inspire our imaginations and satisfy our wallets. But the most fundamental rewards of digital imaging have already decorated our desktops. In the time it takes to blink, you can digitize an image in a format that's ready to print, post, or save for future use. No chemicals, no go-between—nothing stands between you and the perfect photograph but some free storage space and a set of functioning batteries. The world is truly your oyster; what you see is yours to keep.

DEKE McCLELLAND is the author of books including *Real World Digital Photography* (Peachpit Press, 1999).

TIM ARCHIBALD

THOMAS DOLBY

**Interview by David Ferris**

Flipping LPs, inserting 8-tracks, rewinding cassettes—when it comes to enjoying music, all these actions now seem as outdated as mono sound. Soon, even buying and listening to prerecorded CDs may well go the way of the dinosaur. Digital music files—you're probably familiar with MP3, the most common kind—have exploded in popularity recently. And as music lovers turn to the Internet, new services such as Napster (www.napster.com) and Gnutella (http://gnutella.wego.com) are letting them swap songs with people all over the globe. But that's not all. It's now possible to make music on your Mac for less money than ever before.

We talked to Thomas Dolby—music pioneer, Beatnik.com founder, and Mac enthusiast—to see what the future holds.

**Q. How will MP3 and companies such as Napster change the music business?**

**A.** *I think that companies like this are pushing the envelope, really redefining the whole music industry. They are moving at a much faster pace than the pillars of the music industry, and this has caused their legal problems. There's a difference between pushing the envelope and stepping over the line.*

*I tend to side with the musicians who feel that Napster has crossed the line. I feel that it's my music, my ideas, and I think [Napster and MP3 are] going to be reined in. However, I think they have illustrated some pretty fundamental changes in that the fan should be paying for the intellectual property or copyright embodied in the song, not a piece of plastic in a box.*

*As a musician, I've been saying for seven or eight years that the Internet eventually will revolutionize the way musicians live and the way the fans use music. The guys in the middle are going to need to redefine their roles—I see the record companies beginning to embrace the technology and actually fold it into the way they do business, although obviously they're very guarded about their legacy. They don't want to give up the*

YOUNGER THAN 20 OWN A PORTABLE DIGITAL MUSIC PLAYER OR LIVE WITH SOMEONE WHO DOES. —IDC

*stranglehold they've had on the record industry.*

**Q. So without that piece of plastic, how will people get their music?**

**A.** *I've bought six copies of [Pink Floyd's]* Dark Side of the Moon *over the years, but I don't happen to have a copy of it sitting where I am right now. I kind of like the idea that once I've paid for it, I have the right to dial it up. What I've paid for is the right to listen to that music—once, or twice, or for life.*

**Q. When did you first start using Macs for music?**

**A.** *In 1985 or '86 I got a 512K Mac with a basic MIDI sequencer—basically a word processor for musicians. From '85 on, it seemed there was always something better coming—a bigger screen or a faster drive or a better program. I started to realize, though, that twice the numbers doesn't exactly equal good. By the mid-1990s there was a plethora of choices for professionals and aspiring amateurs that was almost overwhelming.*

*Today's Mac is a better machine than ever with synthetic music. Though the early Macs I had were good with MIDI, they were slow with audio waveform. The typical Mac today can crunch audio waveform almost in real time. You can do something on a Mac today that's no different from what you would do in a studio, which costs hundreds of thousands of dollars. You still need a studio—I wouldn't try to record a string quartet or a horn section on my Mac.*

*You sometimes need a studio, a place with total isolation and no traffic noise, a place where the musicians can hang out while you twiddle with the knobs. But a lot of the time I used to spend in a studio I was just bent over a board twisting knobs. It's great that I can now do that in my guest house.*

*I think many of the creative sources and technologies we've been talking about will become native to the Mac. What really impresses me about Steve Jobs and his team at Apple is that they don't look down on the person who dreams of doing more with the computer. I mean, most people use their computers to do their taxes. But Apple knows they really want to be Herbie Hancock or, maybe, Thomas Dolby. They understand amateur's desires.*

**Q. How will music change now that young musicians can set up studios for just a few thousand dollars?**

**A.** *I'm delighted that anyone can do it in a back room. When I started out, you had to play the game. You had to get a record deal and get into a big studio if you wanted to get on the radio. No matter how talented you were, if you couldn't get the contract, you couldn't get near success. That it's changed is a very helpful thing.*

*Because of the Internet, you have access to a whole set of tools and technologies and the opportunity to get your music out without going through A&R departments and record-store owners. I had very little luck with the industry at first, but I was able to produce music that people liked, and it got their attention. It's like an obstacle course that's designed to thwart you—I now believe those obstacles are gone. Anyone with talent can get their music out.*

**Q. Technology has changed a lot since you last recorded. How will your experience be different the next time around?**

**A.** *The idea of making an album seems rather quaint at this point. It could be Web-based or a live performance or an installation. I believe I can connect with my fans and the music through the Web much better than by reading a royalty check or by following the* Billboard *charts.*

*I find it much more satisfying to get immediate feedback from my fans rather than sit on an island somewhere and read a review months later.*

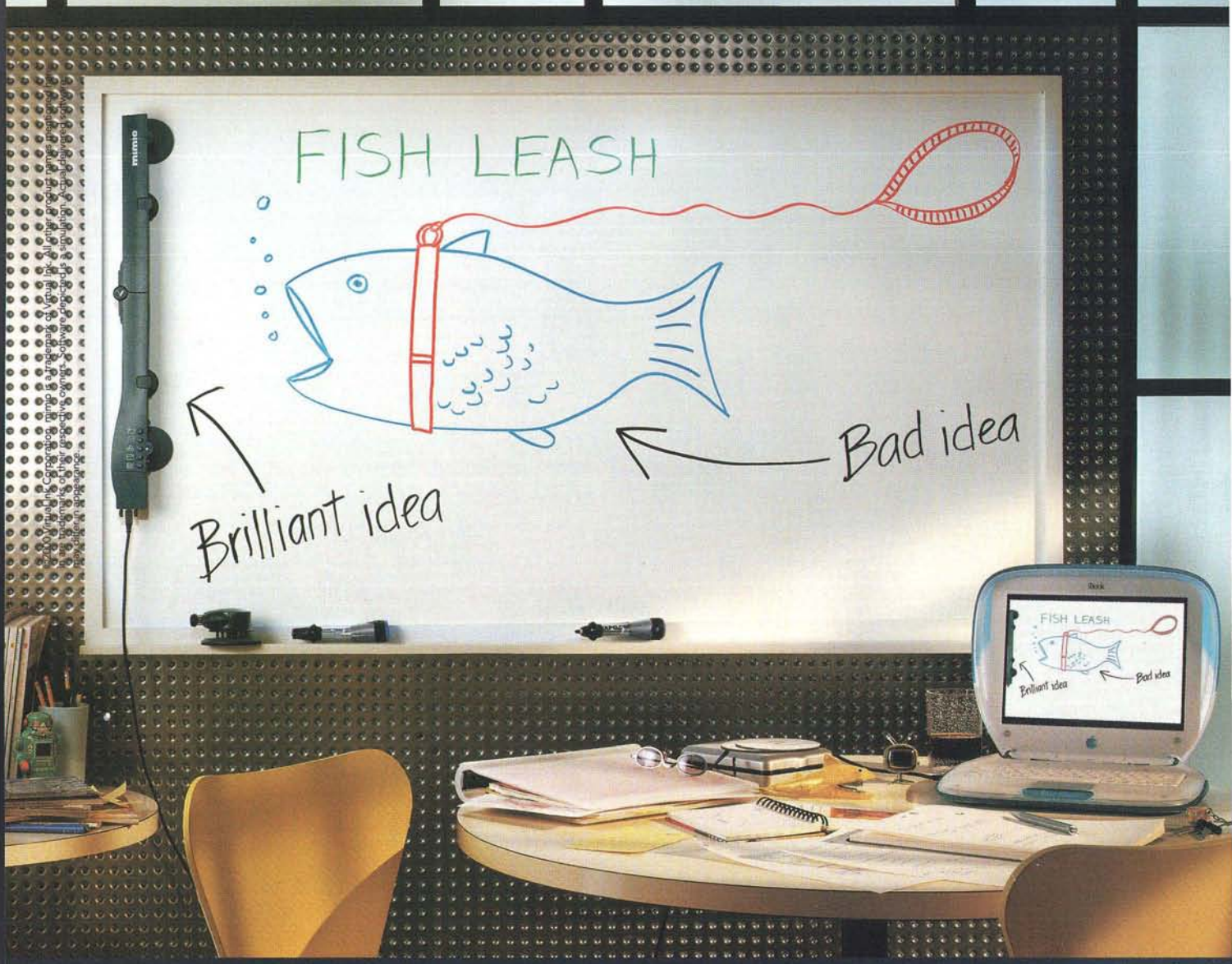
**More Info:**
www.macworld.com/2000/09/features/music

Want to hear all that Thomas Dolby had say? Go to Macworld.com for a longer version of this interview. You'll also find more information about Napster and MP3.

www.macworld.com/2000/08/features/make-noise.html

Learn how to set up a home recording studio.

LINKS

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# seven

# SOFTWARE, REINVENTED

NUMBER OF MACS USED TO CREATE *THE BLAIR WITCH PROJECT*: 4 | COST TO CREATE *THE BLAIR WITCH*

**by Lisa Schmeiser**

Thank God the people who make software have fallen out of love with the box. Boxes are meant to hold something more than a thin disk, a marginally thicker documentation pamphlet, and a whole lot of air. But software makers aren't moving away from the air-filled cardboard-box model of product distribution because they've been stricken with a renewed sense of environmental awareness. They're doing it because people have moved onto the Web. Instead of regarding the computer as the primary tool for getting things done, many of us—me included—use our Internet-enabled computer to perform all sorts of tasks. In a way, a Web browser is now the second operating system, the killer app we use to get *other* applications, or to run embedded applications.

**The Web As Desktop** The next generation of software won't live on your hard drive. You'll own access to programs that live across networks. You won't deal with lengthy installation processes; in order for these new apps to work, they have to be built on standard protocols such as XML, thus permitting anyone on any type of computer to use the application. Some of these programs will work on the shareware model: you download them and then pay about $20 to ease your conscience. Others will be available for a yearly or monthly subscription. The changes in software may have already hit you close to home. Just look at Adobe InDesign, the newest addition to the desktop publishing world. Adobe designed it specifically so new sets of features and general updates could be downloaded quickly via the Web.

**Rough Edges** Like all early technological innovations, Net-based software needs work. We are already seeing a visual Tower of Babel as assorted Net apps battle to set the standard for look-and-feel. Plus, there's also always the danger that if a network-based application lives only on one node of a network and that node goes down, everyone's hosed.

We have to solve these problems: they will not be going away. Web surfers now have a world of Web-based applications at their fingertips. The genie's out of the cardboard box, and he's set up a domain online. There is no going back to one disk, one box, one user.

A veteran of Wired Digital and the Web-design firm Metrius, LISA SCHMEISER is Macworld.com's senior editor.

## Go Beyond the Box

Be an early adopter; you have nothing to lose but installation disks. Check out these Web resources to get firsthand looks at the next wave in software development. At press time, all of these applications were free, but some sites ask you to register.

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|---|---|---|
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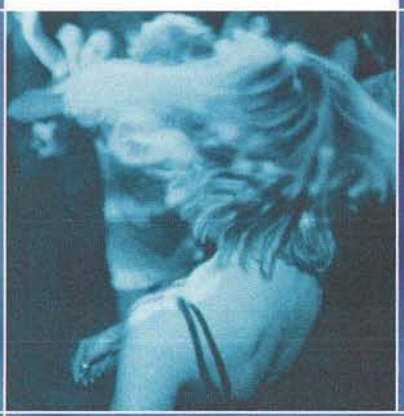
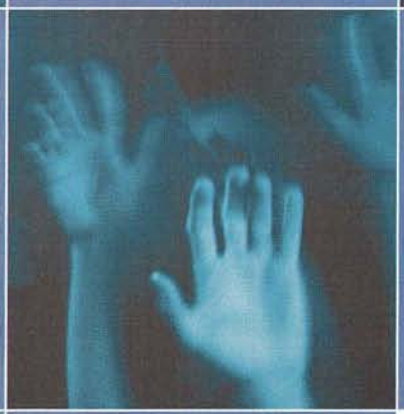


DIGITAL AUDIO



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# THE DIGITAL VIDEO REVOLUTION

*PROJECT*: $31,000. | AVERAGE PRODUCTION COST OF A HOLLYWOOD MOVIE: $60 MILLION.—ABOUT.COM

**Interview by David Ferris**

You now have the power to make movies. Whether you're interested in documenting the kids or you're an aspiring filmmaker, affordable Macs with FireWire connections, DV camcorders, inexpensive storage, and software such as iMovie can help you create digital video more affordably than ever before. We asked Roger Ebert, a Mac user and the influential reviewer of *Chicago Sun-Times* and *Roger Ebert & the Movies* fame, about the future of digital and desktop movies and the role they'll play in your life.

**Q. People can now make films on the desktop and swap them online—what impact will this have?**

**A.** *It's got to have a good effect. John Cassavetes should have been alive to see what's happening now—he's really the godfather of the making-movies-yourself movement. In the 1960s, he showed you could make a movie without the support of a studio. Now, anyone can make a movie for as little as $3,000—$1,500 for the iMac and $1,500 for the digital camera.*

**Q. Will the work of a new wave of amateur filmmakers mean we'll all soon be watching better movies?**

**A.** *The fact that people can make movies doesn't mean they'll make good movies. I don't think there will be any appreciable difference in quality—it takes a tremendous amount of skill and artistry to make a good film.*

*I was talking to a director at the Sundance Film Festival who was bragging that he used six handheld cameras to shoot a bathroom scene. But unless you have at least one person who really knows how to use a camera, you have six cameras' worth of useless film. But a lot of kids are growing up visually literate because of all this technology, and they will probably grow into a number of good directors. They have some role models—Spike Lee, Richard Rodriguez—who made films without raising lots of money, and I'm very encouraged.*

**Q. So what kinds of movies will we see on the Web?**

**A.** *Short films seem to be very happy on the Web, but longer films haven't found a place yet.* The Quantum Project *is a movie that was made entirely for the Web, but it cost too much. The movie was only 32 minutes long and they charged, I think, $5.95 for a high-resolution version and $3.95 for a low-resolution version. If you are going to the trouble of downloading, you should pay less than you would on pay-per-view television.*

**Q. Any tips you'd like to give aspiring filmmakers?**

**A.** *The problem in shooting and editing a movie at home is discipline. You don't want to use every effect and every wipe in the book.*

**Q. Fast-forward a few years. How and where are people going to watch movies?**

**A.** Convergence is the key word at home. Broadcast, cable, the Internet, and satellites will somehow magically come together and seamlessly blend. It will become very common for people to sit in their living room, pull down the projector, and watch a movie with very high-quality video and sound—movies on demand.

ROGER EBERT

LARRY EVANS

**More Info:**
www.macworld.com/2000/09/features/video

Want to hear all Roger Ebert had to say or try your hand at digital video? Go to Macworld.com for the complete interview and digital-video tips.

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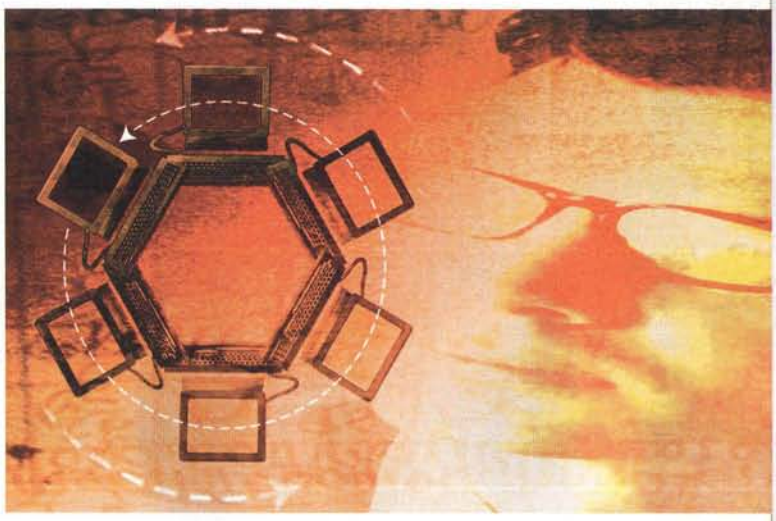
# nine THE NETWORKED WORLD

IN 1999, 13 PERCENT OF U.S. HOUSEHOLDS HAD MORE THAN 3 DEVICES WITH INTERNET ACCESS.—IDC

**by Christopher Breen**

Last year, while giving a lecture at Macworld Expo, I was astonished when a roomful of hands rose in answer to the question "How many of you have set up a Macintosh network?" With that response, I realized that networking was no longer the bailiwick of IT geeks.

With the increasing prevalence of portable computing devices and broadband Internet connections, the need to make everything work together is greater. The driving force behind this networking Manifest Destiny is, of course, the Internet. As the desire to get online grows, we'll see more technological breakthroughs bringing this e-world to people in new ways—through faster connections and without wires, using technologies such as Apple's AirPort.



**Reaching Out** It's no longer enough simply to be able to access the Web. Richer content such as music and Web video makes speed important. If you don't currently have a fast connection to the Internet, it's likely you soon will. According to Jupiter Communications, by the end of 2000 the number of people reaching the Web via broadband methods such as DSL and cable modem will have increased threefold—from 1.3 million in 1999 to 4 million. And that number will only increase as prices drop, the speed of broadband connections increases, and users gain the ability to install their own broadband connection by using technologies such as G.Lite (also known as Universal Asymmetric DSL).

**The Web Widens** As fast as today's high-speed connections may seem, they're nothing compared with what the not-too-distant future holds. Agilent Technologies is working on a form of Ethernet that will deliver broadband data at speeds as fast as 10 *giga*bits per second. This will open up a new world of possibilities.

It won't be long before you can watch more than movie trailers over a broadband connection. TiVo (www.tivo.com), the subscription-based TV-programming service, has signed deals with Liberate Technologies—a developer of software for TV set-top boxes—and Blockbuster Video that will lead to video-on-demand services over the Internet. And once game creators have gigabits of bandwidth to play with, computer gaming could radically change. Game environments could be changed on a server, allowing players to enter an ever expanding world with each log-on. On a more practical note, with superspeed networks up and running, telecommuters will have even better reasons to avoid coming into the office.

**Can We Be Too Connected?** Cell phones and PDAs that connect to the Web to retrieve local movie listings or the location of the nearest ATM are a clue to what the near future holds. Will your refrigerator be able to send a message to Webvan when you're low on milk, or could your garage-door opener page your spouse when you've come home from work? This isn't science fiction—the technology is nearly in place.

This fact raises questions that are personal rather than technological. Do we want our cell phones flashing ads for the store we've just passed? Are we interested in being available 24 hours a day? How much of our privacy are we willing to sacrifice to simple convenience? Ultimately, the answers to these questions will determine the scale and extent of our networked world.

Contributing Editor CHRISTOPHER BREEN pens *Macworld*'s *Mac 911* column.

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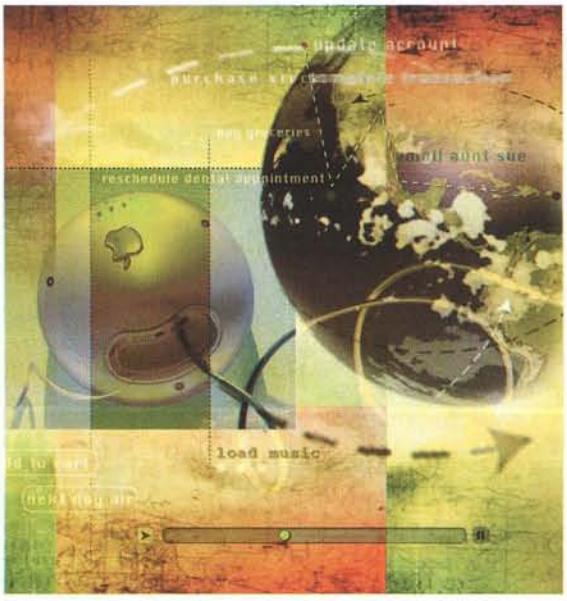
# THE WIRED LIFE

55 PERCENT OF HOUSEHOLDS WITHOUT COMPUTERS SAY THEY DON'T NEED ONE, AND ALMOST 20 PERCENT OF

**by Adam C. Engst**

Think back to 1986. President Ronald Reagan was forgetting the Iran-Contra affair, the Chernobyl nuclear disaster was irradiating Europe, and Apple introduced the Mac Plus after selling 500,000 Macs in two years. In a world where almost no one had a computer at home and modems were rare, could you have imagined the Internet of today?

I certainly didn't when a friend and I first sat down at VT100 terminals between classes at Cornell University and puzzled through the flickering white text of what then passed for the Internet. But soon I was using it to stay in touch with friends from high school via e-mail, download transcripts of Monty Python skits, and set up the rec.arts.int-fiction newsgroup to discuss my major, Hypertextual Fiction.




One thing is for sure—whether it's because of its amazing powers to connect people, or because of the vast financial rewards that now follow in its wake—in the years since 1986 the Internet has begun to find its way into almost every aspect of our lives.

## My iHome

Our kitchen Mac, a PowerBook G3, has gradually wormed its way so deeply into our lives that we can't imagine being without it. It plays MP3s that we've converted from our CD collection, provides access to our networked calendar and contact database, and lets us search My Yahoo's television listings, phone books, local headlines, stock portfolios, and weather reports. I can't remember the last time we pulled the beefy Yellow Pages out of the drawer.

Like many laptops, our kitchen Mac remains tethered to its external speakers and Ethernet connection. As the Internet became more important, laptops became increasingly sedentary; you couldn't get e-mail or browse the Web without ungainly cables. But, thanks to the AirPort Base Station, we can now roam anywhere in the house with our iBook.

Wireless networking *is* the future. It lets laptops (especially those with good battery life, such as the iBook) follow you rather than forcing you to stay rooted with them. That may seem minor, but it's actually a tremendously important step in making computers adapt to us and our lives—instead of the other way around. New gadgets and appliances will take this further.

## Show Me the Money

Seeing the Internet as a venue for commerce was literally unthinkable in 1986, if only because it directly violated the policies of the organizations that owned most of it. How far we've come since then.

Last year marked a sea change in how my wife, Tonya, and I viewed e-commerce—prompted in large part by the birth of our son, Tristan. HomeGrocer.com, the Seattle-based Internet grocery delivery service now joined with Webvan.com, helped us almost entirely eliminate tedious trips to the supermarket. Once we learned that infant clothing slavishly follows seasonal patterns (*try* buying fuzzy sleepers in the spring), we started ordering from WebClothes.com. Of course, our Christmas shopping in 1999 fit neatly with International Data Corporation's estimate that 1999's consumer online purchases were double 1998's.

A lot of very bright people are staking a lot of money on the fact that you *will* shop online, and this shift toward online shopping will start to have serious repercussions. Stores that mimic what you can find online

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ALL HOUSEHOLDS SAY THEY WILL NEVER GO ONLINE. —FORRESTER RESEARCH | Research by CLAUDINE ZAP FRIEDBERG

may die out—in fact, *Metropolis* magazine reports that retail analysts believe "that during the next decade something on the order of 8,600 malls ... will go bankrupt."

### Buy Different

Despite all this straightforward e-commerce—a total of $7.1 billion in the fourth quarter of 1999 alone—we're finally seeing the Internet create some long-overdue changes in the way we pay for goods and services. A good friend with two small children couldn't find the time to go to movies anymore, but after getting a DVD player, he's become addicted to NetFlix.com, an Internet-based DVD-rental service that sends you all the DVDs you want to see for a fixed monthly fee. No more late charges. Bye-bye, Blockbuster.

But the real battle to be waged is over how we buy music. We'll see monthly subscriptions to Napster-like services soon—a recent Webnoize Research survey found that more than half of college students currently using Napster to download illegal copies of music would be willing to pay $15 per month for the service. And can it be long before artists start distributing their songs with an ad jammed in the middle?

The ideal solution is micropayments. First proposed as part of Ted Nelson's visionary hypertext system, Xanadu, in the late 1960s, micropayments are very small payments for very small amounts of data or service. Electricity is essentially a micropayment system—every time you turn on a light, your electric bill increases by a few tenths of a cent. Instead of paying $15 for a CD, you could pay a penny each time you play an MP3 song.

That way the MP3s I play frequently on our kitchen Mac might cost a few bucks per year, but others would barely add up to spare change. And if the MP3 songs came from an independent musician, you could be sure your entire fee would go directly to the artist. To co-opt Nicholas Negroponte's terminology, existing payment schemes and pricing models work well for atoms, but micropayments make more sense for bits.

### Ghosts of Internet Past, Present, and Future

We take so much of the Internet for granted, whether it's online Yellow Pages searches, accessing customized maps and driving directions, or ordering books from Amazon.com. Much of what we do was barely possible even a few years ago, much less when my friend and I sat in front of those VT100 terminals at Cornell. The incredible rate of change has caused not a few of us to become techno-ostriches, with our heads firmly buried in the sand. Sure, much of the Internet is overhyped, but in the end it's so damn useful we just can't afford to ignore what the future offers. It's a small world, and the Internet is making it smaller all the time. **m**

Contributing Editor ADAM C. ENGST writes the monthly column "This Wired Life" for Macworld.com and is the publisher of TidBits, a ten-year-old electronic newsletter about things Macintosh.

**More Info:**
www.macworld.com/columns/wired_life/

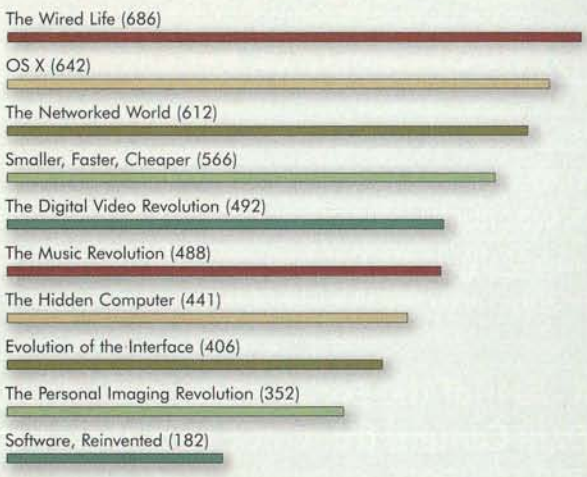
Explore the intersection of personal life and technology every month by checking out Adam's online column.

LINKS

## What You Think

What do you think will be the most important changes affecting Mac users in the year to come? We asked readers of Macworld.com to tell us what trends they thought would most impact their lives (see the chart for results). But many of them also made their own predictions. To join the conversation, go to www.macworld.com/2000/09/features/trends.

**Which Trends Will Most Affect Your Life?**
(966 respondents)



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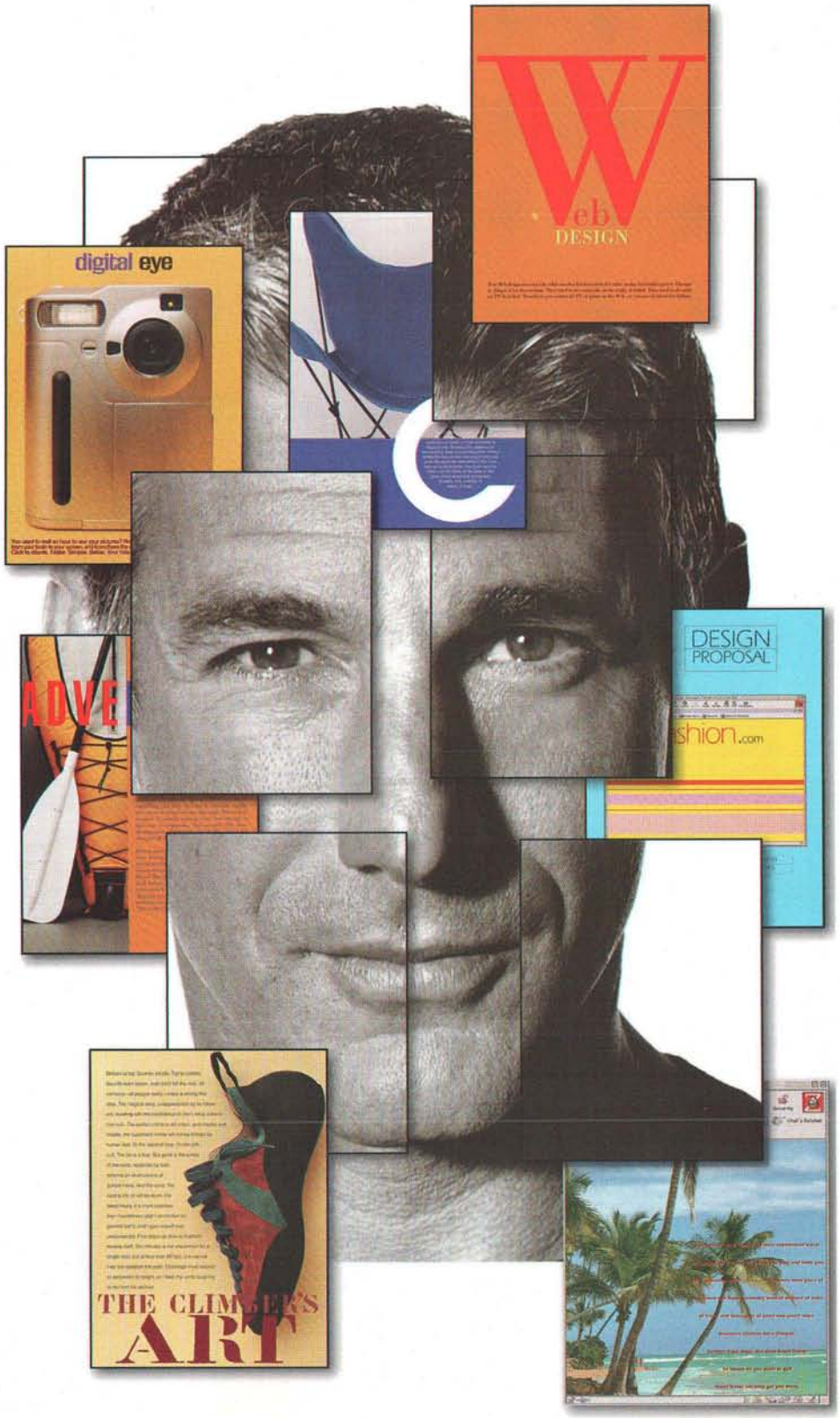

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ANDREW GORE

# Welcome

The Mac has changed, and so has *Macworld*. Come take a look around.

Steve Jobs unveiled the squat little box that used black-and-white pictures as its command-line interface in 1984. By 1993, the Mac had become so much more than that first single-screened animal. Its users were struggling with a vast array of new options, rapidly changing technologies, and capabilities that had been science fiction a short time before.

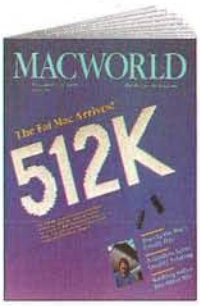
For *Macworld,* the Macintosh's steadiest (though sometimes critical) companion through those years, it was also time to evolve. In September 1993, *Macworld* changed a magazine design that had stood largely untouched since its birth in 1984.

In order to stay relevant to its readers, *Macworld* needed to address the bigger issues of a more complex platform, as well as the more diverse needs of a growing population of Mac users.

Here we are, seven years later, with a design that has withstood the test of time. But we are again at a crossroads. The Macintosh market of 1993 is dead. Steve has returned and reinvented Apple; the Macintosh; and by extension, the entire computer market.

*continues on page 69*

March/April 1984

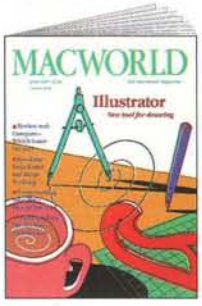



November 1984

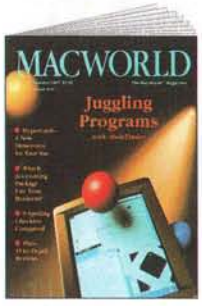
December 1984

February 1985

May 1987




June 1987

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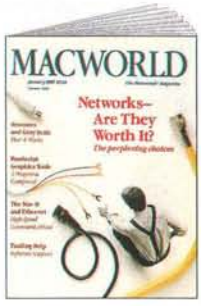
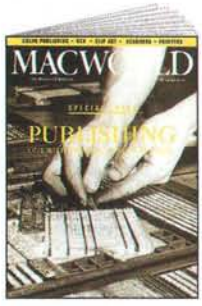



January 1988

July 1990

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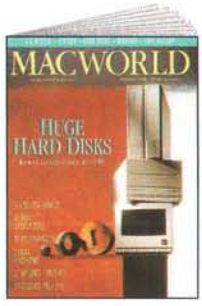


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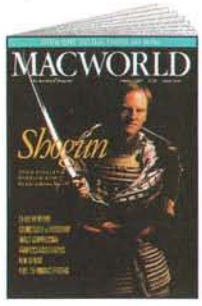


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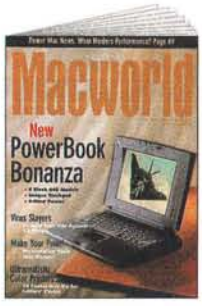


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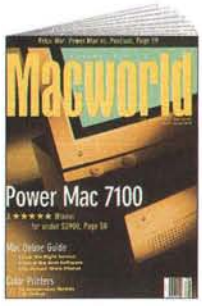


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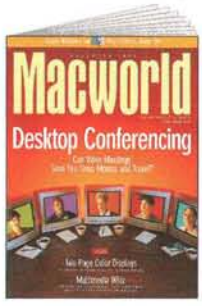


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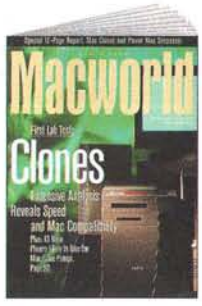


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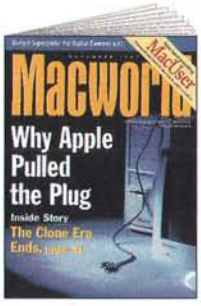
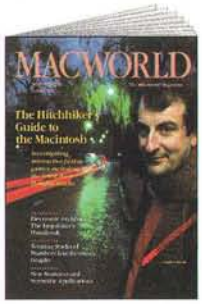



November 1997

July 1998

August 1998

November 1998

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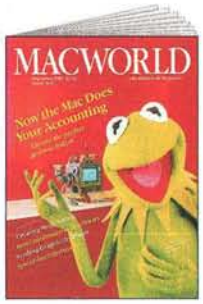


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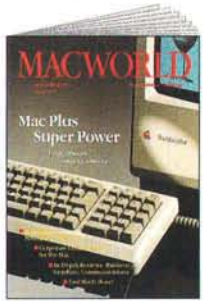


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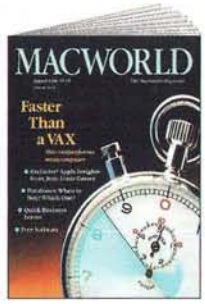


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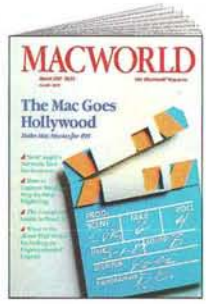


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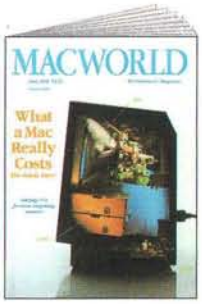


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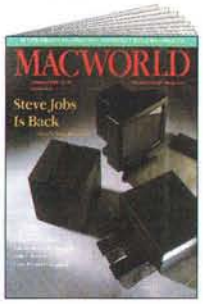


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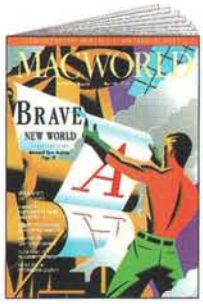


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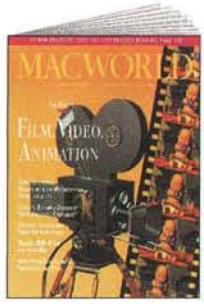


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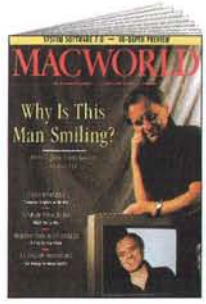


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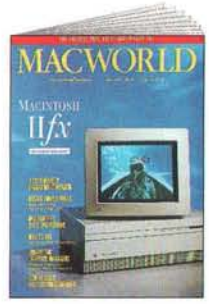


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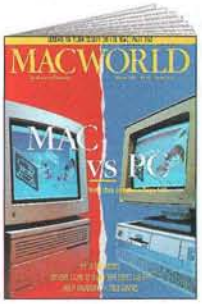


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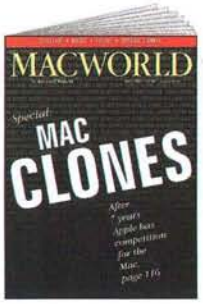


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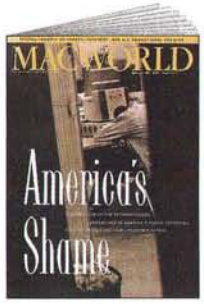


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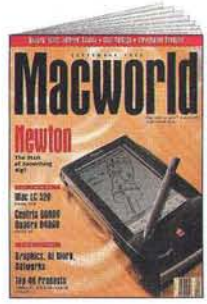


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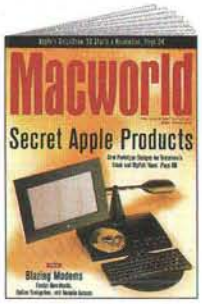


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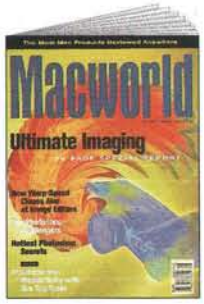


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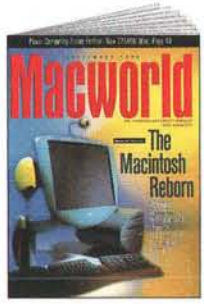


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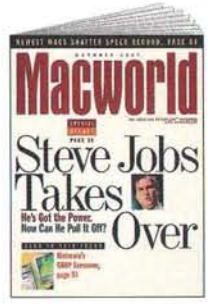


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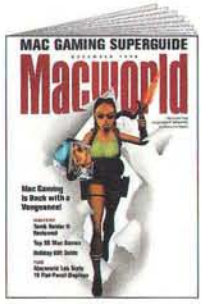


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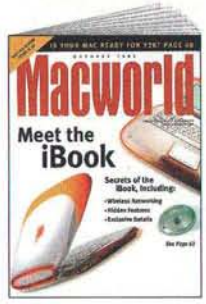


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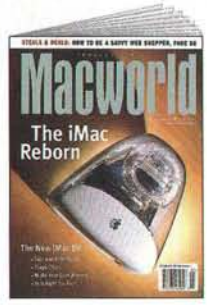
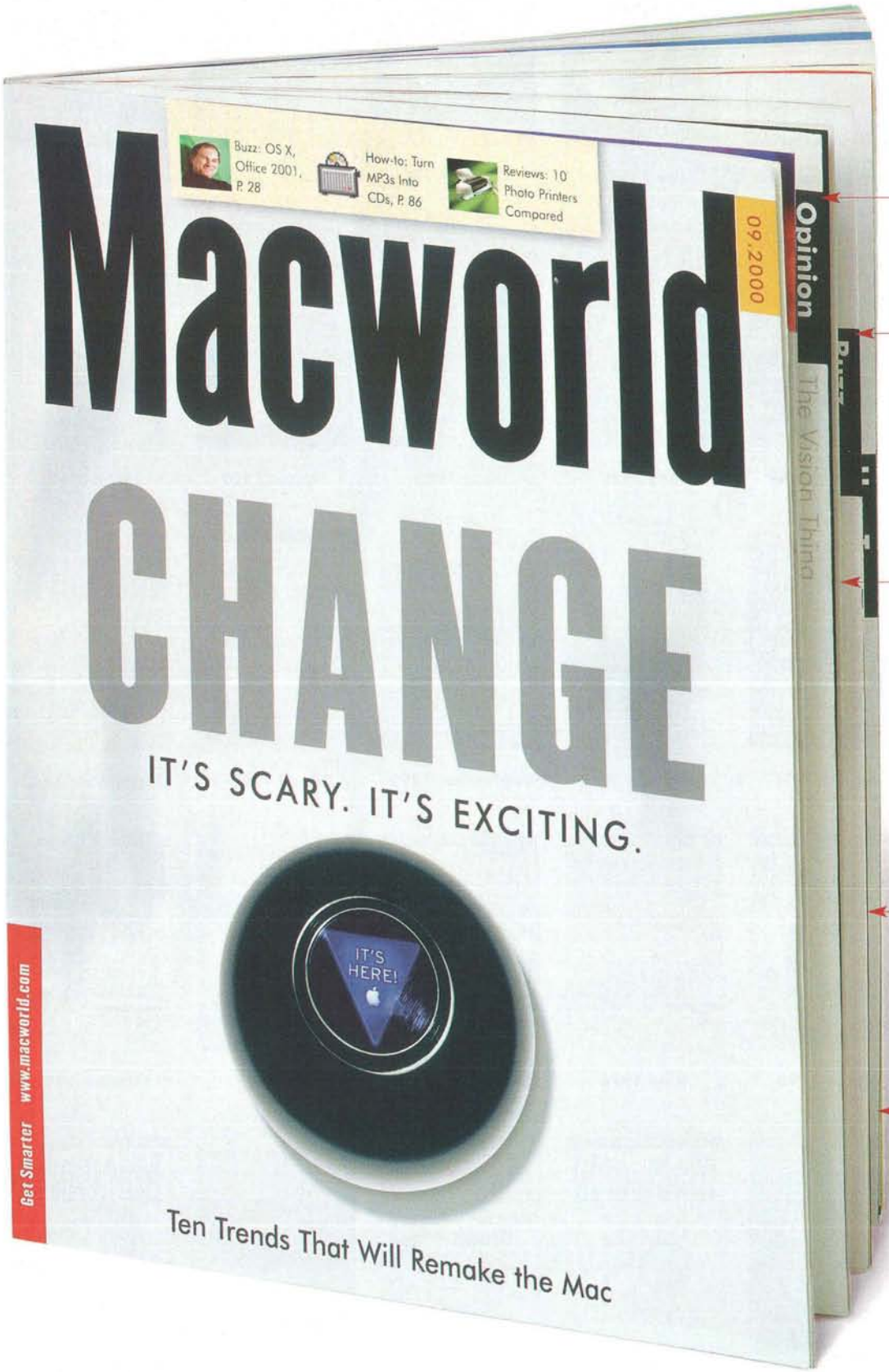



January 2000

June 2000


Buzz: OS X, Office 2001, P. 28
How-to: Turn MP3s Into CDs, P. 86
Reviews: 10 Photo Printers Compared
Macworld
09.2000
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The Vision Thing
CHANGE
IT'S SCARY. IT'S EXCITING.
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Ten Trends That Will Remake the Mac

### You Are Here

Asking for directions shouldn't be hard. In the new *Macworld* design, navigation clues are vertical; this navigation tab with knockout type indicates the section you're in. The gray type describes what's on an individual page.

### What's the Buzz?

The Mac isn't just a computer—it's a way of life. Mixing Mac savvy with a dose of humor, our new *Buzz* section offers Mac news, a wry take on current Mac events, and a collection of award-winning recipes. (OK, maybe there won't be recipes.)

### More Info

The Internet offers a vast array of information on any subject. To find more online about something in the print magazine, look for the Links Box with related resources, examples, and articles.

**More Info:** www.macworld.com

Get more information about using Photoshop to retouch images and what happens to our collective sense of reality when we do.

LINKS

### Know How

Learning how to do something is hard enough without having to learn how to learn. *Macworld*'s old step-by-step format changed from article to article. The step-by-steps in the new *How-to* section use a single template with clear, easy-to-follow steps and a lot of graphics.

### Up Front and Center

We can't help peeking at the last page of a mystery novel any more than we can resist reading the conclusion of a *Macworld* review first. So we've made it easy to peek. Leading off every *Macworld* review, the Reviews Summary Box gives you the bottom line—up front.

*continued from page 66*

*Macworld* must reinvent itself as well.

### Science Nonfiction

Since 1993, the science of design has moved forward. *Macworld,* which has tried to reflect the Mac's design panache and creative spirit, once again has an opportunity to lead the market in magazine. We hired one of the world's top design firms, Pentagram, to help us in the two-year process of reengineering *Macworld.* Pentagram has a long list of print, architectural, and industrial design accomplishments (check out www.pentagram.com for more information). It even boasts Robert Brunner, the founding director of Apple's Industrial Design Lab, as a partner.

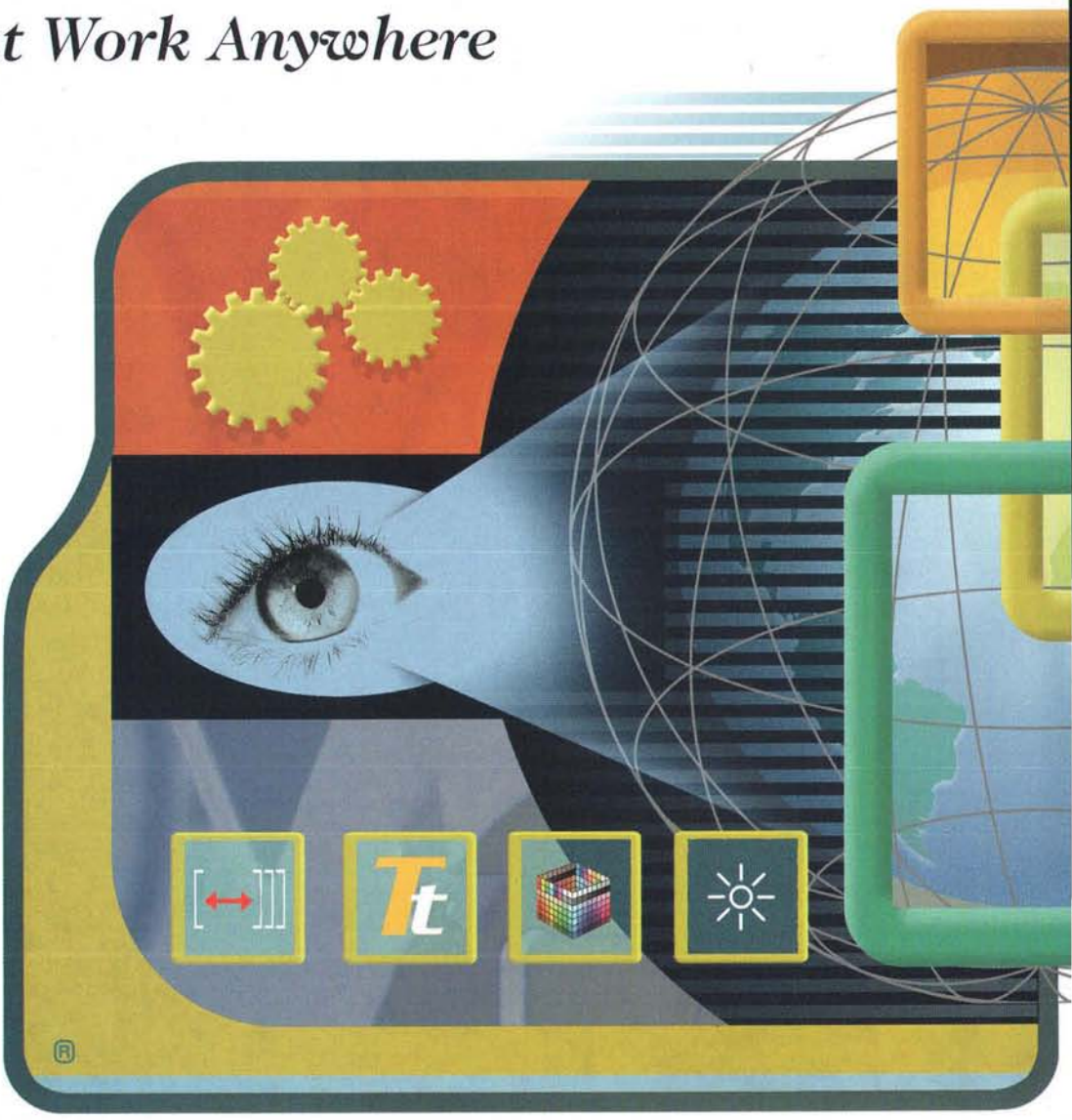
The science of the Mac platform has changed, too. PowerPC; G3; G4; USB; FireWire; AirPort; iMac; PowerBook; iBook; and Mac OS 7.5, 8.0, 8.5, 9.0, and X have all come through the doors of Macworld Lab in the last seven years. And, of course, the Internet has become omnipresent in that time.

Which brings us to today—and another *Macworld* redesign. In these pages, we introduce you to the innovations of our first redesign in seven years.

This redesign isn't just about looking good. It's about reflecting in both words and images the new spirit of the Macintosh: a world where computers become as indispensable as the telephone; a world where our computers—and the magazines about them—need to be as creative, productive, and fun as we are. Welcome to a new Mac world. And here's your new *Macworld* to guide you through it. **m**

# Reconcilable Differences

## *Design Web Sites That Work Anywhere*



How-to

by Jeffrey Zeldman

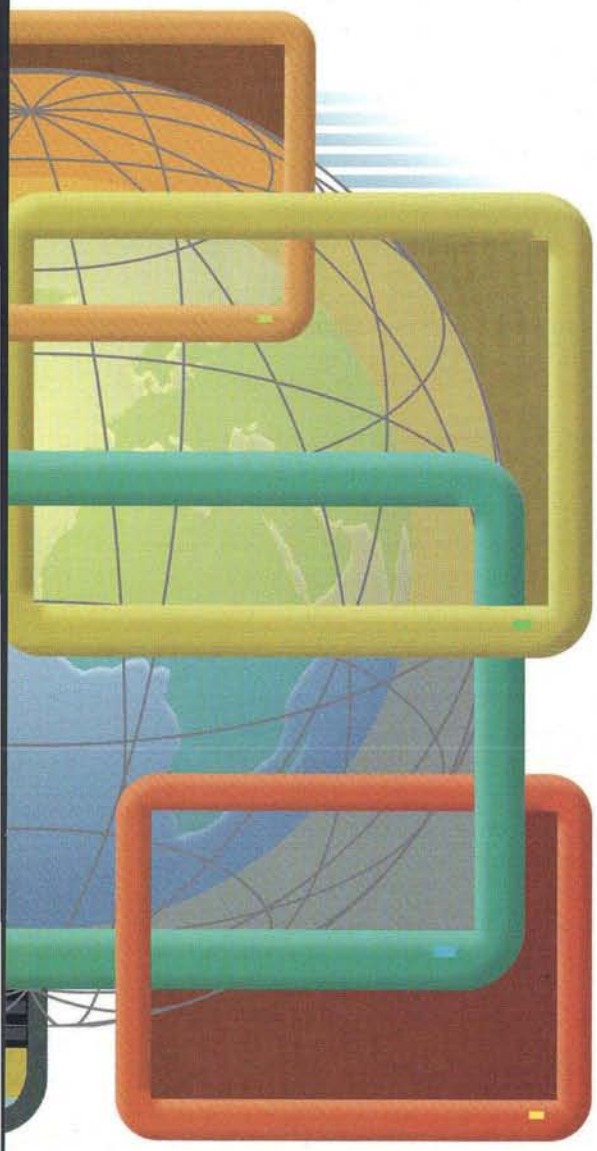
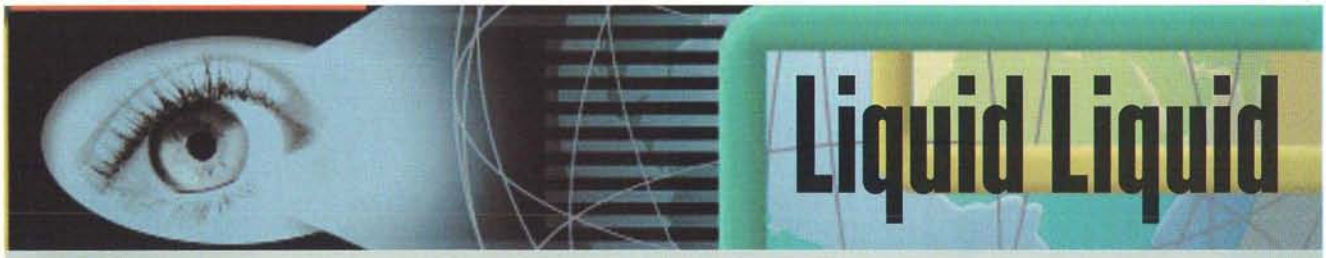


Illustration by John Ritter

The beauty of the World Wide Web is that it reaches a staggering number of people. It has become increasingly important, touching all aspects of our lives. When you design most Web sites, you want to reach a healthy chunk of the potential viewers. Yet sites developed on Macs can look staggeringly ugly on other platforms if designers don't watch out for differences in the way the systems treat the information. Because Microsoft Windows is the most prevalent platform on the Web, tweaking your site so it looks as good on Windows monitors as it does on your trusty Mac is essential to maintaining a wide audience.

Even on one platform, there are significant differences between the two main Web browsers, Microsoft Internet Explorer and Netscape Navigator. For tips on dealing with these variations, see "Zap Common Browser Bugs" in the April 2000 issue and on Macworld.com at www.macworld.com/2000/04/create/browserbugs.html.

*continues*



# Liquid Liquid

**The ideal Web page redraws to fill any browser window, regardless of platform or monitor size or resolution. You can achieve this liquid ideal with HTML tables that use percentages rather than absolute widths. Keep the following guidelines in mind as you create flexible tables:**

**1** Create layouts that flow to the available browser window space by using percentages instead of pixels to specify the relative sizes of table cells.

**2** Toss in a little cell-padding to create margins between elements. Set the table border to zero to avoid a mechanical appearance.

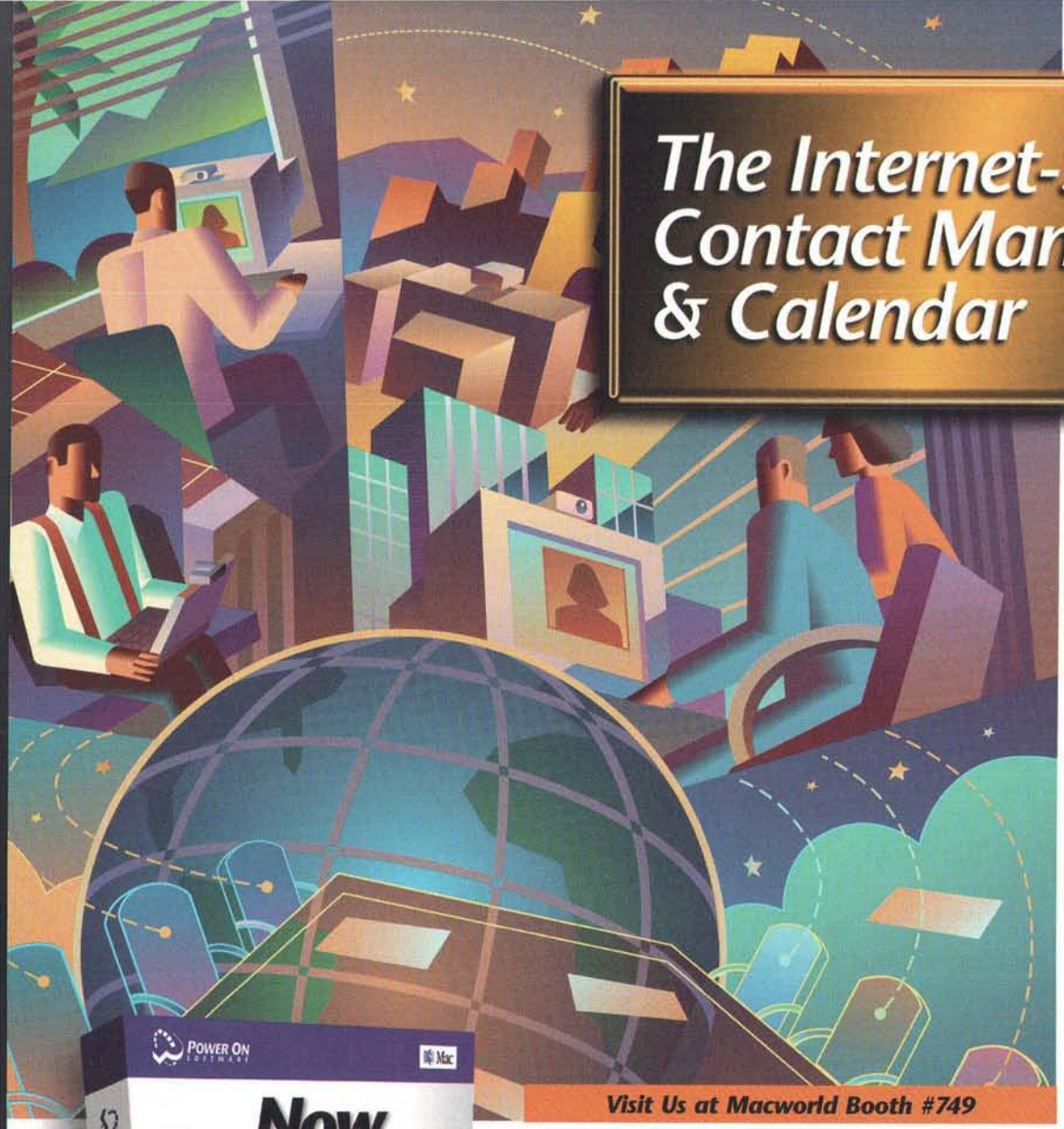
**3** If you use a WYSIWYG editor such as Macromedia Dreamweaver or Adobe GoLive, the program will probably generate pixel-based layouts. You'll have to go into the HTML source code and edit the widths by hand to replace the pixel widths with percentages.

## FLEXING YOUR MUSCLES

This is an example of a flexible Web page in action—it changes as you resize the browser window. The code behind this page is on the right.

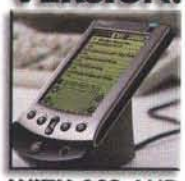
```
<table border="0" cellpadding="10"
cellspacing="0" valign="top" width="100%">
<tr>
<!-- Your content here. -->
<td width="70%" valign="top">
<a href="index.html">
<IMG SRC="logo.gif" width="100"
height="50" alt="Widgets.com, specializing in
wacky, wonderful widgets! Click here to return
to the home page.">
</a>
<P>
Welcome to Widgets.com, your online source
for wacky, wonderful widgets
</P>
</td>
<td valign="top" width="30%" bgcolor=
"#336699">
<P>
This blue box is the sidebar that contains spe-
cial information about Widgets.com. It is 30
percent of the width of the page, regardless of
the visitor's operating system or monitor size.
</P>
</td></tr>
</table>
```

*continues*



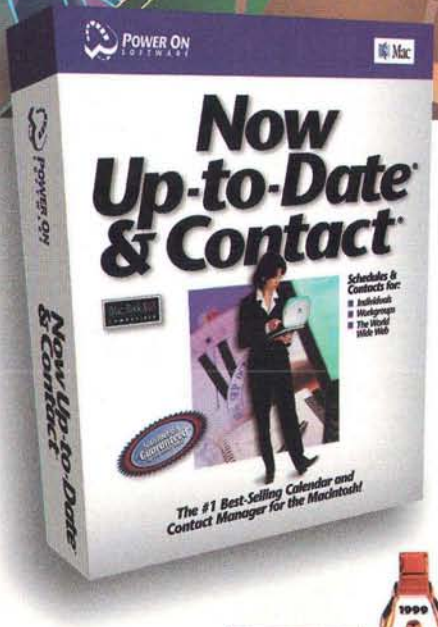
# The Internet-Savvy Contact Manager & Calendar

**NEW VERSION!**



**WITH OS9 AND PALM SUPPORT**

**Visit Us at Macworld Booth #749**



iMac, iBook, G3 & G4 COMPATIBLE

*Whether you drive a desktop Mac (even a trusty old 68K machine running System 7), pound a PowerBook, or pack a Palm®, you need Now Up-to-Date & Contact, the best choice in contact management and calendaring.*

*No other product allows you to keep track of your contacts and schedule so easily. With its ability to recognize common phrases and automatically enter items on your calendar, you will spend less time on data entry. Built-in email tracking; word processing with mail merge; label and envelope generators with postal bar codes; and alarms to remind you of key events make this an essential product for anyone who needs to save time and stay organized. A built-in TCP/IP server allows you to add users and share group data, while keeping personal information private. Designed for the Internet, Now Up-to-Date & Contact offers a unique web plug-in architecture that will have you soaring through cyberspace.*

*Need a map or an e-mail address for someone? Click the blazingly fast search engine to find the contact and let the software do the rest! It is no wonder that Now Up-to-Date & Contact is the #1 best-selling Macintosh PIM on the planet.*

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### Just Your Type

Mac users often come across sites with tiny type. We squint; we swear; and then if we're interested enough, we go to our browser's preferences option to increase font size. Most likely, the designers of these headache-inducing sites are unaware of the resolution difference between Macs and PCs.

The Mac OS defaults to 72 pixels per inch (ppi), where a pixel is the same as a point. So 12-point type is 12 pixels tall, 72-point type is 72 pixels (or 1 inch) tall, and so on. Windows users start off with 96-ppi resolution, and 12-point type in Windows is 16 pixels tall.

This difference means that in 4.0 (and earlier) browsers, what looks discreet on a Windows box is often illegibly small on a Mac. Conversely, type that's readable on a Mac is horsey on a Windows PC. In the Mac version of Internet Explorer 5 (IE5) this is no longer an issue, because its default setting is 16-pixel type at 96 ppi. Netscape has followed a similar path in its new version of Navigator. This not only solves your problem as a Web user, it also helps you as a Web-site designer. By checking your work in IE5 for the Mac and Netscape Navigator 6, you'll get a much better idea of how your type will look on the Windows platform.

However, 4.0 browsers are still in use, so cross-platform size issues will continue to plague the Web. There are only two ways to avoid these problems.

**The Zen Approach** Avoid setting sizes altogether, and specify font families in your Cascading Style Sheets (CSS). For more information on CSS, visit www.w3.org/style/css/ or read the "Fear of Style Sheets" tutorial at www.alistapart.com/stories/fear. See the sidebar "Cascading Style Sheet" for a breakdown of CSS basics.

Specifying font families ensures that your body text appears at a size each visitor will find comfortable. Most designers hate this idea because we're used to the absolute control we've enjoyed in print. But it's the most compatible and foolproof approach.

**The Pixel-Perfect Approach** Sometimes you absolutely must control font sizes. In these cases, you need to specify pixels in your Style Sheet. (See the sidebar "Pixel-Based Style Sheet.") Pixels are pixels regardless of screen resolution, platform, browser choice, or browser version. This technique doesn't display properly in Netscape Navigator 3 or earlier, but the tiny percentage of your audience still using that browser will see their default font, and that's OK.

### If the Site Fits . . .

You finish your site's master template, sigh with satisfaction, and inform your Windows-using client that the layout is ready for final approval. Minutes later, you get an angry phone call: "I have to scroll down to see the company slogan!"

What happened? The Windows task bar appears by default at the bottom of the screen, while Mac OS reserves the right side of the screen for icons representing your hard drive, saved files, and aliases. Your client sized his browser window so he can see crucial areas of his desktop, which means his browser window wasn't as deep as yours.

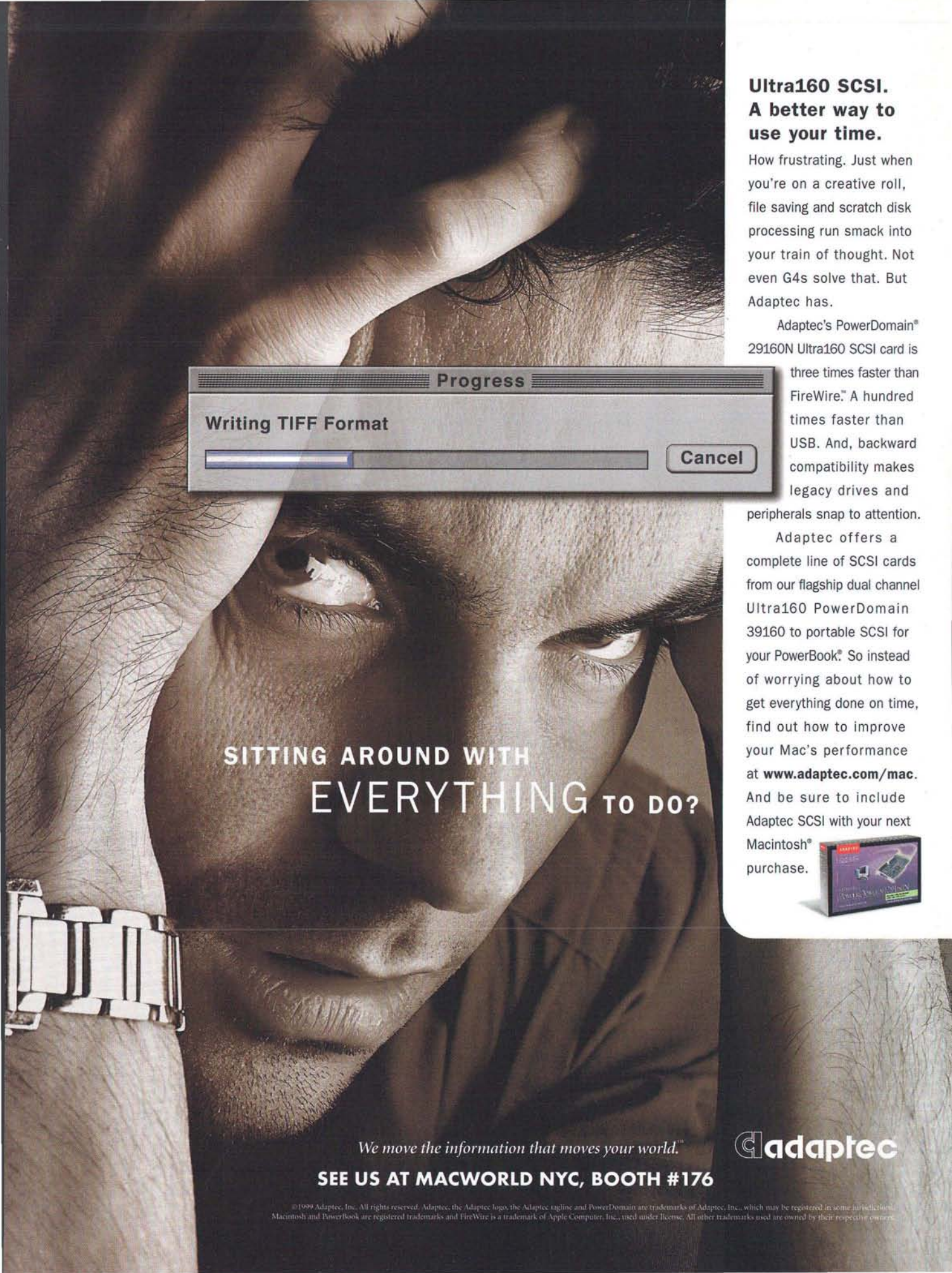
*continues*

## CASCADING STYLE SHEET

| CODE | WHAT IT DOES |
|---|---|
| `<style TYPE="text/css">` | *Tells the browser to interpret the code that follows as CSS data.* |
| `<!--` | *Tells older, non-CSS-capable browsers to ignore what follows. Non-CSS browsers include Internet Explorer 2 and earlier, and Netscape Navigator 3 and earlier. Neither is widely used today.* |
| `P {font-family: verdana, arial, helvetica, sans-serif;}` | *Tells the browser that all paragraphs (P) will appear in the Verdana font if it's present on the reader's system. If Verdana is not present, the browser will use Arial. If Arial is missing, Helvetica will do the job. If none of these fonts is present, the browser uses the reader's default sans serif font.* |
| `-->` | *Tells older, non-CSS-capable browsers that they can stop ignoring the code.* |
| `</style>` | *Tells all browsers that the CSS data is finished.* |

## PIXEL-BASED STYLE SHEET

| CODE | WHAT IT DOES |
|---|---|
| `<style TYPE="text/css">` | *Tells the browser to interpret the code that follows as CSS data.* |
| `<!--` | *Tells older, non-CSS-capable browsers to ignore what follows.* |
| `P {font: 11px verdana, arial, helvetica, sans-serif;}` | *Tells the browser to display all paragraphs (unless otherwise marked) in the Verdana font and to set the type size to 11 pixels. Provides alternative fonts for visitors who lack Verdana.* |
| `-->` | *Tells older, non-CSS-capable browsers that they can stop ignoring the code.* |
| `</style>` | *Tells all browsers that the CSS data is finished.* |

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Similar glitches crop up when you design only for your monitor size. With a rigid Web layout, your site may appear to be shoved into the corner of a visitor's large monitor. Or it may be too wide for small monitors, forcing visitors to scroll left and right (or, more likely, encouraging them to leave).

Because of small monitors and *browser chrome* (the buttons and text fields used to navigate the Web), some visitors will have a usable area of less than 600 by 400 pixels. But if you design specifically for that space, your site may look ludicrous on a larger monitor at 1,600 by 1,200 pixels.

The answer is to embrace the fluid nature of the Web so that content reflows according to visitors' operating systems and window sizes. The sidebar "Liquid Liquid" is a guide to making your site go with the flow.

The liquid approach handles the horizontal problem, but what about the vertical? If you don't want visitors to have to scroll down to see important content (such as navigation tools, logos, and headlines), place it within the first 380 pixels of vertical space.

### Gamma, Gamma, Hey!

Different platforms have different standard gamma settings. Put simply, your Mac's default gamma of 1.8 looks brighter than the various Windows defaults. Ignore this difference, and your subtle earth tones will look like mud.

**WINDOWS REALLY IS THE DARK SIDE**
*The Windows gamma (left) is noticeably darker than the Mac OS gamma (right). The ideal image looks good on both platforms.*

Cross-platform gamma compensation is built into Adobe Photoshop 5.5 (which includes the Web image editor ImageReady 2.0) and Fireworks 2.0. If you don't have these programs, two low-cost shareware apps and the following steps can help.

One app is GammaToggle. You can download the $5 shareware control panel GammaToggle FKEY from www.acts.org/roland/thanks/. Once you install it, you can press ⌘-shift-9 to toggle between Mac and PC gamma settings.

If you have older versions of Photoshop, you may want to use Furbo Filters. You can download the $39 shareware Furbo Filters Webmaster pack from www.furbo-filters.com. (Disclosure: I helped create this application.) Install it, and you can switch between Mac and PC gamma in Photoshop by choosing Filters: WWW.Furbo-filters .com: Browser Preview.

To permanently set Photoshop 5.0 and later to the Windows gamma space (not recommended if you also design for print), take the following steps:

- Start Photoshop.
- Select File: Color Settings, and choose RGB Setup.
- In the dialog box that appears, set the RGB drop-down menu to sRGB.
- Go to Control Panels, and choose ColorSync.
- In the System Profile drop-down menu, choose sRGB Profile.

### Color My Web

Only 216 colors are guaranteed to display correctly in both Windows and Mac Web browsers. These "Web-safe" colors are called the Netscape Color Cube or the Web-safe palette.

Use Web-safe colors whenever possible, particularly for large color fields, typography, and backgrounds. Any other color will *dither* (break into dots) on an 8-bit monitor, or *shift* (change to a color you didn't intend) on a 16-bit system. See "Ugly Colors" for examples of dither and shift.

**UGLY COLORS**
*When colors dither, your Web page can look as though it's breaking out in blight.*

Fireworks and Photoshop 5.0 and later include the Web-safe palette; if your image editor doesn't, download it from www.lynda .com/hex.html. To prevent dominant colors from shifting when saving images as GIF files, work in 32-bit or 8-bit mode.

### Beauty in the Beast

Platform differences are a fact of life. The rise of Linux, the coming of Mac OS X, and the dispersion of the Web onto cell phones, Palm devices, and automotive tracking systems are enough to keep the savviest Web designer dancing. But with the right strategy, you can accommodate these differences and make pages that are accessible to millions. And that's the real beauty of Web design. **m**

JEFFREY ZELDMAN is a Web designer (www.zeldman .com) and the editor of A List Apart, a site for people who make Web sites (www .alistapart.com).

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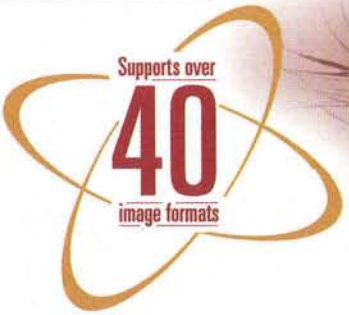

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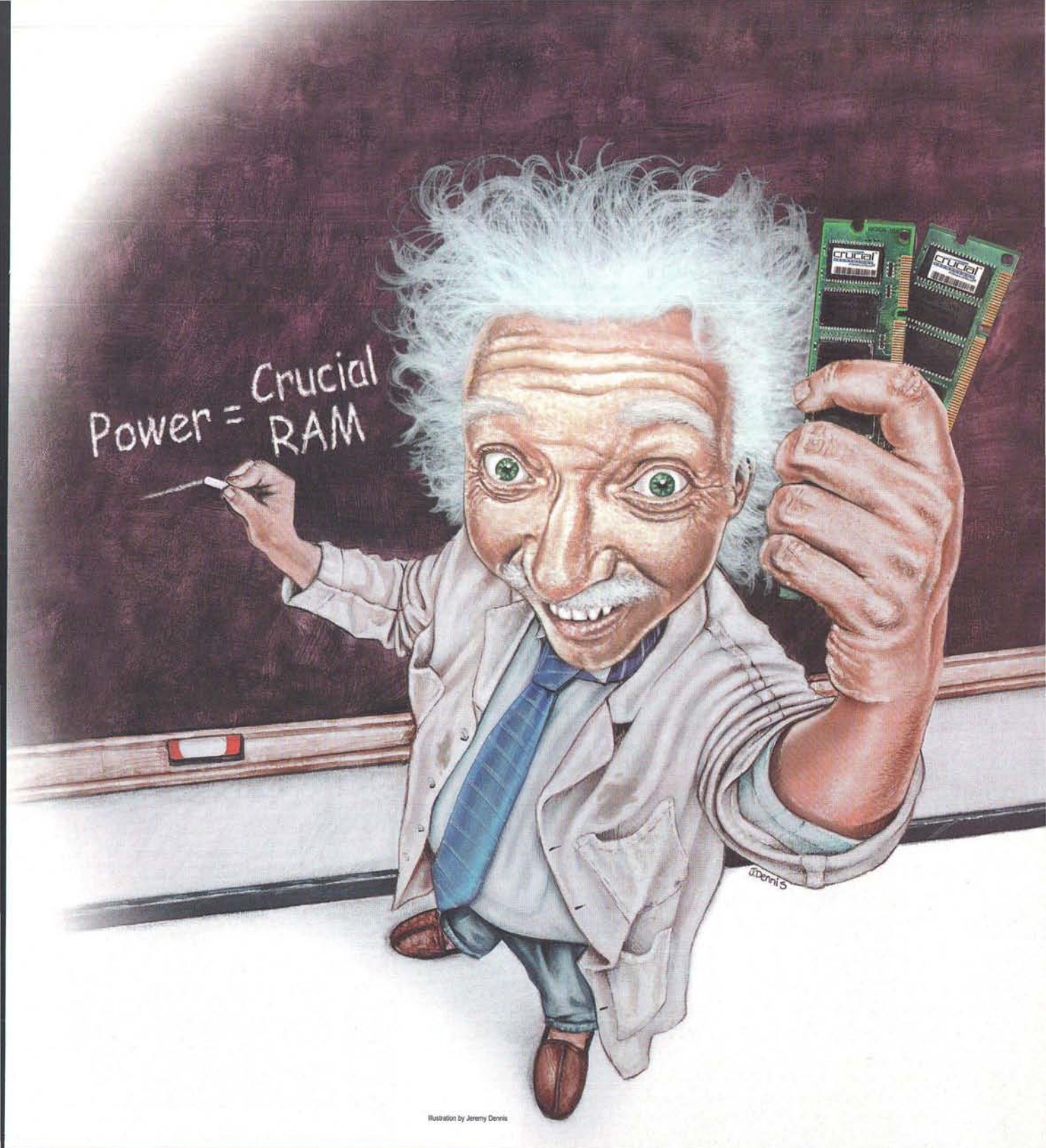


Illustration by Jeremy Dennis

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DEKE MCCLELLAND

# Doctor Your Digital Images

## Photoshop techniques to improve photos from any digital camera

The digital-camera industry is booming. That's hardly surprising when you consider that a typical midrange camera (priced between $500 and $1,000) not only is fun to use but also shoots million-pixel photographs that you can download, edit, and send to the far ends of the globe in a matter of seconds.

But working with digital cameras also has its drawbacks, especially for graphics and design pros who must prepare the image to suit the high-resolution standards of print media. The fact is, even the top 3-megapixel camera captures at best half the resolution theoretically attainable with run-of-the-mill 35mm film. To make matters worse, most digital photographs undergo a heap of JPEG compression, and *all* are upsampled from the mere 8 bits of color data recorded by the camera's CCD (which captures the image) to the 24 bits that you see on your computer screen.

Although you can't magically add resolution to a digital photo, or restore entire elements that the camera missed, you can often salvage what may at first appear to be a lost cause. Using a basic regimen of blurring, sharpening, and blending in Adobe Photoshop, you can smooth over even the most extreme imperfections and enhance fragile detail in an image.

In addition to writing *Macworld Photoshop Bible* (IDG Books Worldwide, 1999), Contributing Editor DEKE McCLELLAND hosts the 20-tape video training series *Total Photoshop* (Total Training, 2000).



**1 Photo Woes** Any number of factors can affect the quality of a digital image—from limitations in the camera's hardware to the technical know-how of the photographer.

***Before*** *This photograph suffers from common digital-image problems. The most noticeable—its dark tones—results from poor light metering. The image also has a preponderance of "noise," caused by excessive JPEG compression and a relatively low resolution of just under 1 million pixels.*

*Although you could avoid most of these problems by using the right digital camera, often graphic designers have no control over the photographer's equipment. By the time the image lands on your monitor, all you can do is repair the damage.*

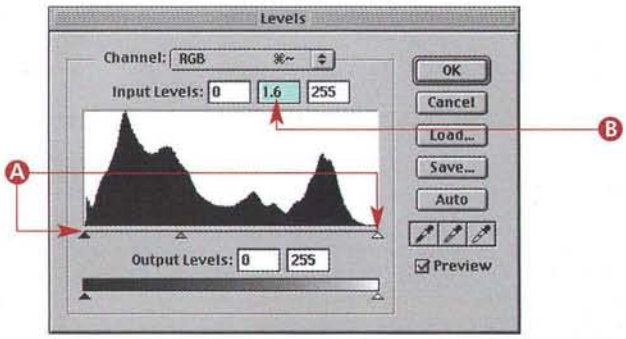
***After*** *Following its Photoshop workout, the previously muddied image appears brighter, smoother, and more detailed. Even though you may not be able to cure your tainted pixels completely with this process, you can certainly get them out of intensive care and into something closely resembling a state of cheerful health.*

## 2

**Adjust Levels** It's fair to say that every digital snapshot requires some degree of color correction. Levels and Hue/Saturation are arguably the two best tools for this purpose. The first of these, the Levels command, balances the image's brightness and contrast.

*Before you begin adjusting the image, take a moment to save it under a different name so you don't overwrite the original. You can save in the JPEG format—it's perfect for digital photos, after all—but make sure to increase the JPEG quality to 10 (the maximum setting) to reduce further loss of data.*

*Choose the Levels command (⌘-L) from the Adjust submenu of the Image menu. The Levels window displays a histogram of the image's highlights and shadows.*



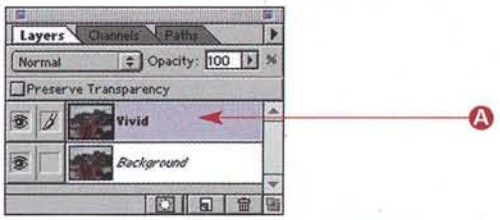

*Crop the histogram by pushing the outer sliders A to the first group of pixels on either end of the histogram.*

*The most important option in the Levels window is the middle Input Levels value B, known as the gamma value, which lets you lighten the midtones. Because the original photo is so dark, I raised the gamma of my image to 1.6—a huge leap.*

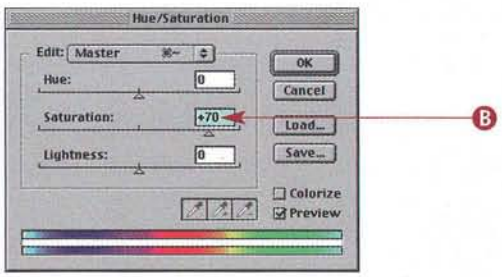
## 3

**Saturate Your Colors** The Levels command did lighten the photo's colors, but it also washed them out, making them appear grayer. To get more-vivid colors, use Photoshop's Hue/Saturation command.

*Using Hue/Saturation has the side effect of enhancing JPEG compression artifacts—often radically. So before applying the command, duplicate the image to a new layer. (Use ⌘-A to select the image and ⌘-J to copy it to a new layer.) Give the new layer a recognizable name, such as "Vivid."*




*In the Layers palette, highlight the new layer A. Then choose Hue/Saturation (⌘-U) from the Adjust submenu of the Image menu.*




*Increase the Saturation value well beyond what seems sensible. For example, I raised the Saturation of this image to 70 percent B. Don't worry if the image looks absurdly grainy—you'll need an extreme effect when it comes time to blend this layer with the original image in Step 5.*

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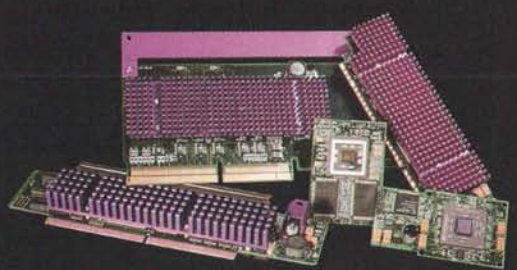

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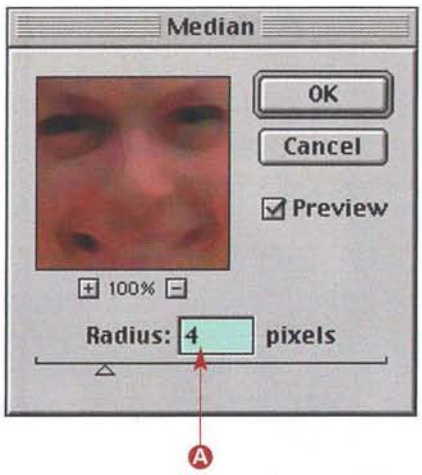
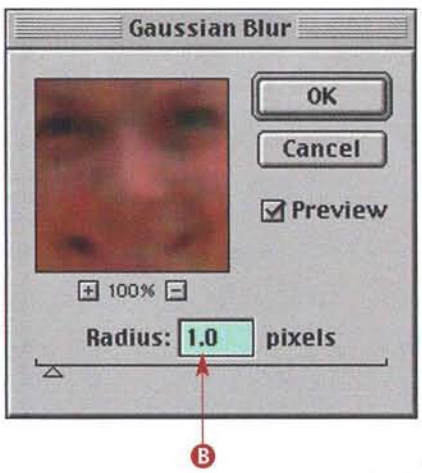
# 4

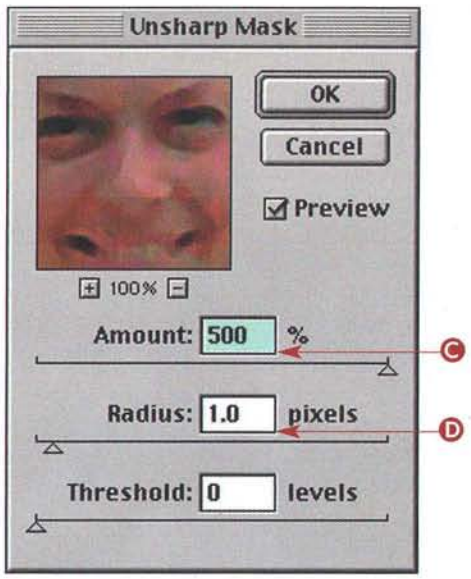
**Smooth the Photo** The next step is to reduce the unwanted grain and enhance the highly desirable edge detail. You achieve the first goal using the often overlooked Median command and its more common buddy, Gaussian Blur; you achieve the second using that most essential of all filters, Unsharp Mask. Together, these three operations will melt away random pixels and flow them into recognizable forms.




*Choose Median from the Noise submenu of the Filter menu. In the Radius box, enter a value of 3 pixels or more; increase the value until the compression artifacts are almost entirely smoothed away* **A**. *Don't worry about the fact that the Median command makes the photograph appear doughy or indistinct; you'll recover the image's focus later.*




*Median has a habit of generating its own inaccurate edges. To blur them away, return to the Filter menu and open Gaussian Blur from the Blur submenu. Apply the filter with a Radius value of 1.0 pixel* **B**. *A tiny bit of blurring is all you need.*




*To regain the crisp edge detail, choose Unsharp Mask from the Sharpen submenu under the Filter menu. When adjusting the controls, bear in mind that you're going for an exaggerated effect. I generally crank the Amount value to its full volume of 500 percent* **C**. *(After so much blurring, you'll need all the sharpening you can get.) Then set the Radius value to 1.0 pixel, matching the value of the Gaussian Blur filter* **D**.

*The result is by no means a perfect image. The photograph should look oversaturated and gummy, as if molded out of brightly colored plastic. You'll probably also continue to see compression artifacts; in fact, they may be more conspicuous than ever.*

**More Info:** www.macworld.com/2000/09 /features/imaging

Get more information on using digital cameras, including product reviews and image editing tips.

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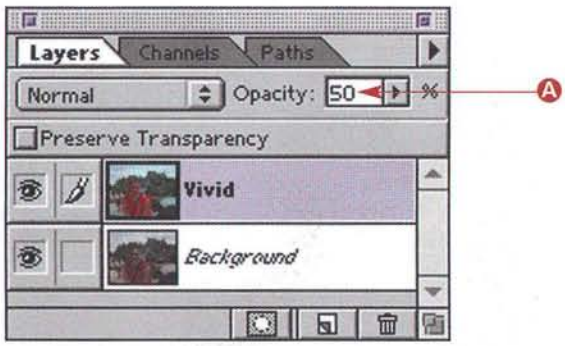
# 5

**Blend Layers** You now have an extremely dark and an extremely bright image. To find a happy medium, you need to blend the exaggerated layer with the original image behind it by lowering its Opacity value.

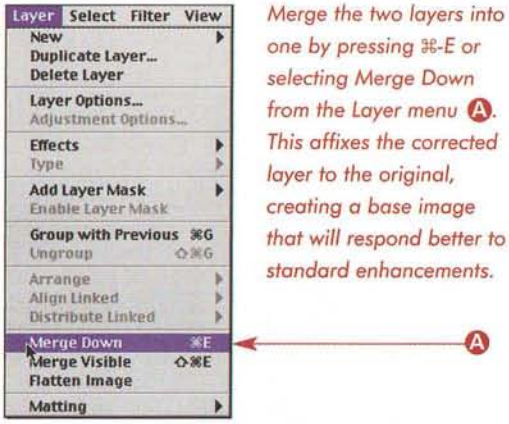
*In the Layers palette, adjust the Opacity value of the corrected image's layer (A). If your original photo had few faults to begin with, make the opacity of the new layer low—say, 5 percent or less. (A low Opacity value favors the original image over the filtered layer.) Just a little dab of detail enhancement can make a perceptible difference.*




*Problem-prone images, such as this one, warrant higher Opacity values. A value of 50 percent is about as high as you'll want to go: placing more weight on the extreme adjustment layer than on the original image generally results in a surreal effect. Bear in mind that what you're trying to achieve is not an image that seems radically corrected, but rather one that looks as if it didn't require correction in the first place.*

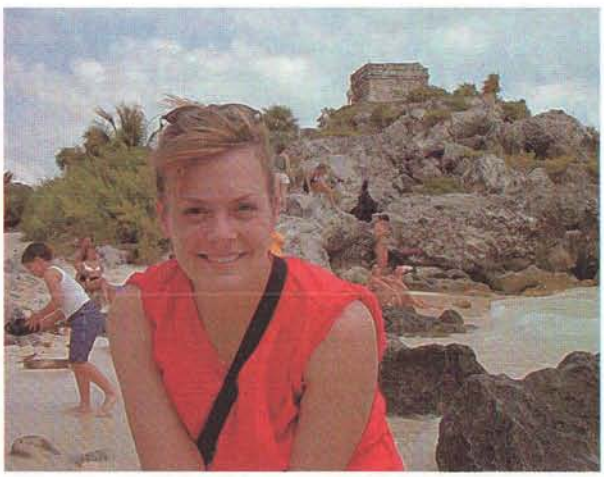
# 6

**Finishing Touches** Once you've found the best balance between the two images, you can merge them into a single layer for further adjustments.




*Merge the two layers into one by pressing ⌘-E or selecting Merge Down from the Layer menu (A). This affixes the corrected layer to the original, creating a base image that will respond better to standard enhancements.*

*Now you can apply color and focus adjustments as if you had scanned the image from a high-quality film source. I again boosted the saturation of my colors using Hue/Saturation and reapplied the Unsharp Mask filter—albeit far more subtly than before.*



***Final Result*** *Depending on how your image looked before you started, you may end up with something that approaches absolute perfection. Although my snapshot remains rife with compression artifacts and strange color aberrations, the image now looks far better than it did before.*

JONATHAN SEFF

# Turn Your MP3s into Audio CDs

## You Don't Need an MP3 Player to Take Tunes on the Road

Sure, you love your MP3s, but you don't want to stay tethered to your computer to listen to them. Fear not—for you can indeed take your beloved MP3 files with you by transferring them to CD.

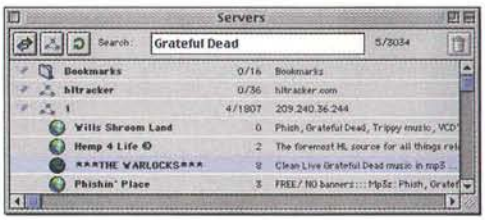
MP3 (MPEG-1 Audio Layer 3) files take up much less room than uncompressed AIFF or WAV files—on average about 1MB per minute of audio—making MP3s easy to download and store. Because they can run on basically any operating system with an MP3 player, MP3s are easy to share between platforms. Considering how much they're compressed, they can sound surprisingly good.

For our plan, you will need some method of procuring MP3s, either via the Internet or otherwise; Casady & Greene's (www.casadyg.com) SoundJam MP; a CD-R or CD-RW drive (always use CD-R discs for making audio CDs—CD-RWs won't play in most consumer CD players); and Adaptec's (www.adaptec.com) Toast, which probably came bundled with your CD burner.

Keep in mind, however, that because some data gets thrown out to achieve an MP3's small size, your files won't sound as good as a commercial CD. Also, if you have poorly encoded MP3s—with skips and pops, for example—you'll hear those flaws on your audio CD.

Associate Editor JONATHAN SEFF covers music and multimedia and has burned too many audio CDs for his own good.

**1 Download Your MP3s** There are a few ways to download music files to your computer. It's best to pick MP3s encoded at a high *bit rate*, a measure of the amount of data present in a given time period. A bit rate between 128 and 192 Kbps (kilobits per second) is generally good for music, but for speech only, you can get away with a lower bit rate (about 96 Kbps).




***Hotline*** *(www.bigredh.com) gives you access to thousands of Hotline servers, many of which contain commercial MP3s.*

***Macster*** *(www.macster.com) allows Mac users to search the Napster database for almost any song and then download it quickly and at no cost.*

*Web sites such as* ***Riffage*** *(www.riffage.com) let you search for, download, and listen to tons of new and unsigned bands.*

How-to

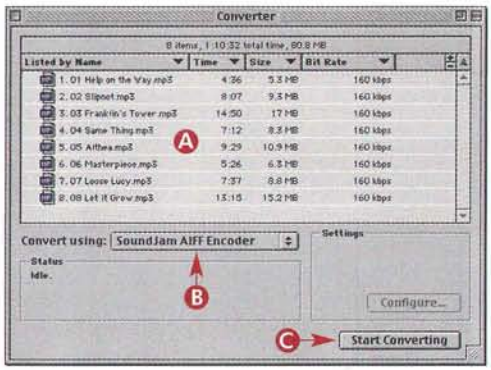
MP3s to CDs

## 2 Convert Your MP3s to AIFFs

Next you need to turn your MP3 files into AIFF (Audio Interchange File Format, a Mac audio standard) so you can burn them onto CDs. SoundJam MP, a popular commercial MP3 encoder, is one of the easiest programs to use for this task.

*Open SoundJam MP's Converter window from the Window menu, or press ⌘-3.*

*Drop your MP3 files into the Converter window* Ⓐ.




*Select SoundJam AIFF Encoder from the Convert Using pop-up menu* Ⓑ.

*Click on the Start Converting button* Ⓒ.

**TIP:** *You can also use the following applications to translate MP3 files to AIFF format. Note that QuickTime Pro can convert files only one at a time.*

*In Adaptec's Toast 4 Deluxe, simply drag and drop your MP3s into the Toast window. Toast will then convert the files as you record the CD.*

*In QuickTime Pro, open an MP3 file and choose Export from the File menu. Select Sound To AIFF from the Export menu. Click on the Save button.*

*The free MPecker Drop Decoder (www.anime.net/~go/mpeckers.html) lets you convert MP3s to both AIFF and WAV files by dragging and dropping MP3s onto the program icon.*

**More Info:** www.macworld.com/2000/09/features/music

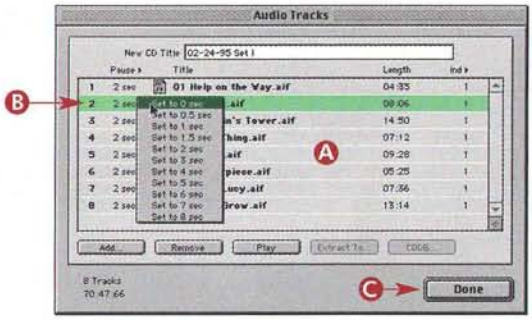
Do you want to learn more about digital music? For more helpful articles, check out the above URL.

LINKS

## 3 Arrange Your Tracks and Burn Your CD

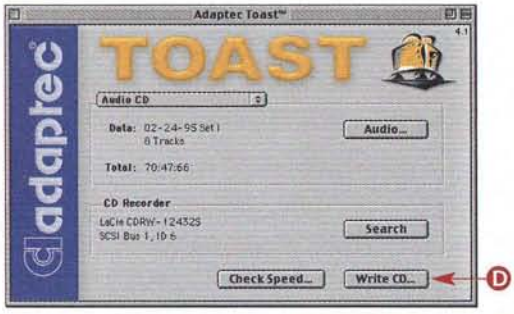
Restart your computer. This clears up the RAM so you don't get any "hiccups," which can ruin the CD. Using Toast 4 Deluxe or your bundled version of Toast (we used Toast 4.1), order your AIFF files as you want them to appear on the CD. Then it's time to burn this sucker!

*Open Toast and drop your AIFFs into the Audio Tracks window* Ⓐ. *Arrange the tracks in the desired order by dragging and dropping them into place.*

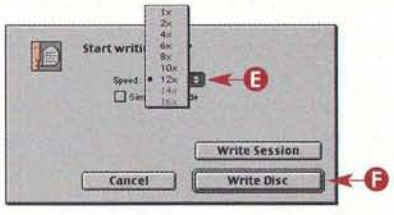



*From the pop-up menu in the Pause column* Ⓑ, *set the pause between tracks to your liking.*

*Click on the Done button* Ⓒ.




*Insert a blank CD-R (not a CD-RW) in your CD burner and click on Write CD* Ⓓ.




*Select the write speed of your CD-R drive from the Speed pop-up menu* Ⓔ.

*Click on Write Disc* Ⓕ, *and you're done!*

JOHN RIZZO

# Simultaneous Surfing

## Share One Internet Connection among All the Macs in Your House

How-to Networking

These days, it seems as though the whole world either is on the Internet or wants to be—which probably includes everyone in your house. Problem is, they all want to surf at the same time.

You could pay through the nose to set up an Internet connection for every person. But here's a better idea that will save you money: share a single Internet connection among multiple Macs and PCs. If you have high-speed broadband access, such as DSL or cable modem, your connection speed won't suffer from simultaneous surfing. Sharing a connection may have more impact on a dial-up modem connection, but you may still find it worthwhile as a low-cost alternative.

To share an Internet connection, you need a network to connect your computers and gateway software or hardware so you can interface between your network and the Internet. Once you've got these installed, you're on your way to Internet independence for the whole household.

JOHN RIZZO is the author of *How Macs Work, Millennium Edition* (Macmillan, 2000) and the editor of the MacWindows Web site.

**1 Gather Your Tools** Here's a checklist of items for a shared Internet connection using a DSL or cable modem. It doesn't include modem equipment because your ISP provides that.

***Ethernet Cables***

*You need an Ethernet patch cable (with standard RJ-45 connectors) for each computer on the network. You need another cable to link your hub and the DSL or cable modem. The type of cable depends on which port of the hub you use—for the uplink port, use a patch cable; for any other port, use a crossover cable. Cables range in price from about $2 to $15.*

***Ethernet Hub***

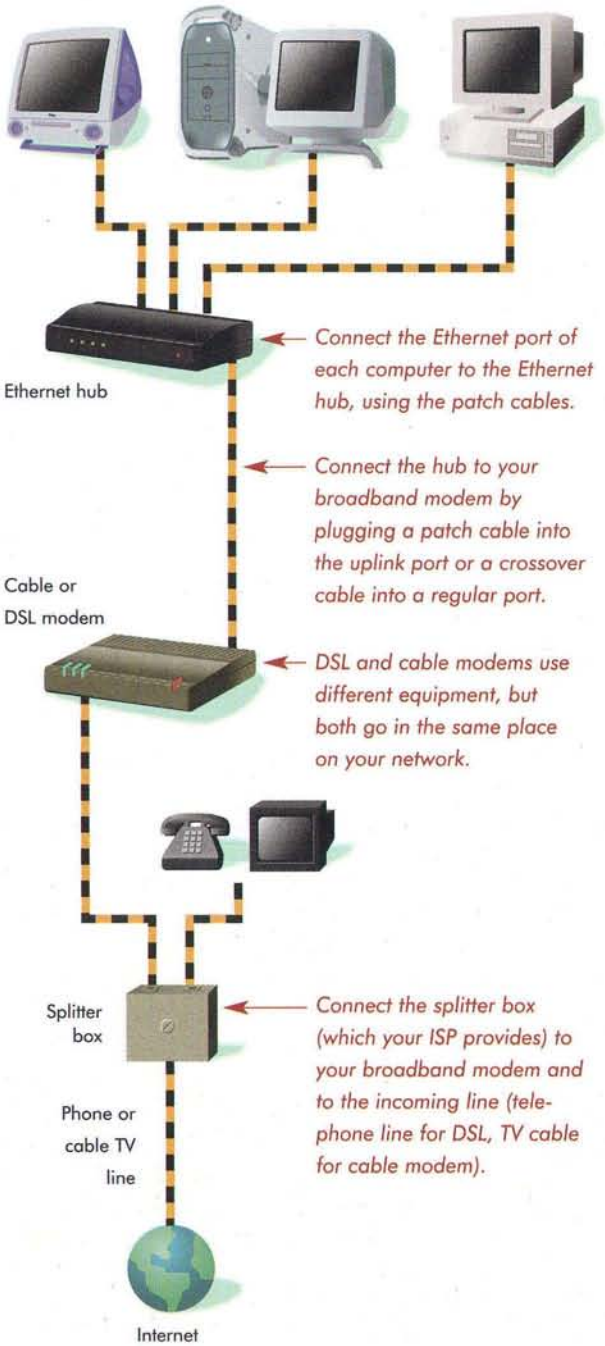
*A 10-Mbps hub with four or five ports, such as Farallon's Starlet hub (510/346-8001, www.farallon.com) or Asanté's FriendlyNet (800/662-9686, www.asante.com), costs around $40. You could spend more and get a 100-Mbps hub for faster file transfer between your computers, but it won't speed up the Internet connection.*

***Internet Gateway***

*Your gateway can consist of either hardware or software. Software tends to be less expensive but requires that you have the gateway computer running for any computer on the network to access the Internet. In my example (Step 5), I use Vicomsoft's SurfDoubler ($30 for three users; 800/818-4266, www.vicomsoft.com).*

## 2

**Create a Network** This topology is for a broadband modem network. The setup for a standard modem is similar—each computer connects to the hub. The difference is that the modem connects to the gateway computer. If you have only two computers, don't use a hub—connect them with an Ethernet crossover cable instead.



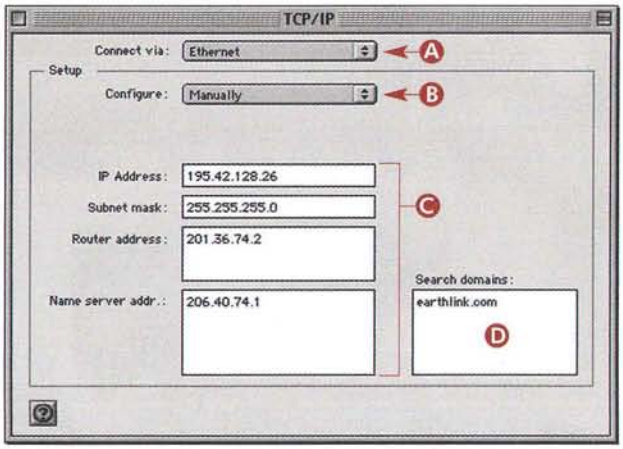

John Farnsworth

## 3

**Configure Your Gateway Mac** Decide which Mac will run your gateway software and configure its TCP/IP control panel. For a DSL or cable-modem connection, this information depends on whether your ISP gives you a *static* IP address (a fixed number you enter) or a *dynamic* one (a number your Mac gets from the server whenever it connects).

*Open up the TCP/IP control panel.*

*Set the Connect Via pop-up menu* Ⓐ *to Ethernet.*




*If your ISP gives you a static IP address, set the Configure pop-up menu* Ⓑ *to Manually. If your ISP gives you a dynamic address, set it to Using DHCP Server. (For dial-up modems, use your existing configuration.)*

*If you have a static IP address, type in the numbers* Ⓒ *your ISP gives you. (Note that the name server address is also commonly called the DNS server address). If you have a dynamic IP address, you don't need to enter anything in these fields.*

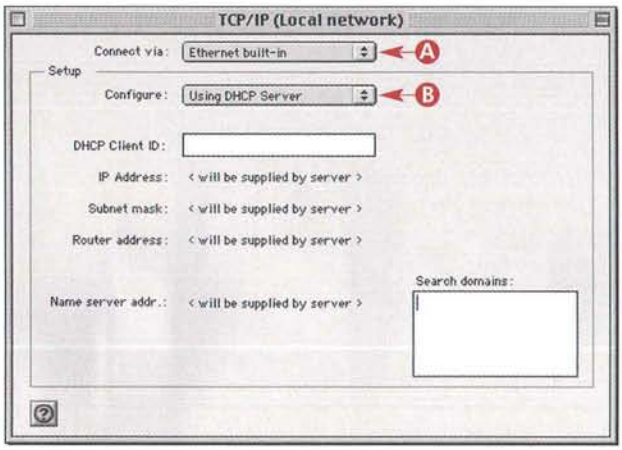
*Type the domain name of your ISP in the Search Domains field* Ⓓ.

## 4 Configure the Other Computers

Configure the other computers (those without gateway software) so that each one will look for a *DHCP server*—software that assigns an IP address, subnet mask, and name server address.

*On each Mac, open the TCP/IP control panel.*

*Set the Connect Via pop-up menu* **A** *to Ethernet built-in.*




*Set the Configure pop-up menu* **B** *to Using DHCP Server.*

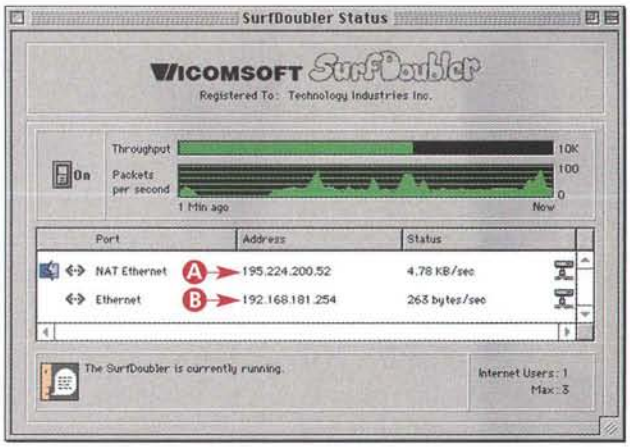
*SurfDoubler and many other Internet gateways contain a DHCP server. However, it doesn't matter if the DHCP server or the gateway is running. If a Mac doesn't find a DHCP server, it configures the information in the TCP/IP control panel for you if you use the setup shown here.*

## 5 Install the Gateway Software

Next, install and configure the gateway software on the chosen Mac. SurfDoubler configures the software for you after you run the installer. It then launches the Vicomsoft Local Administrator utility and your Web browser so you can test the connection and modify the configuration.

*At the end of the installation process, SurfDoubler prompts you to test your connection. To do so, simply click on OK.*

*When the gateway is running, the Vicomsoft Local Administrator utility displays two IP connections. The gateway uses the address next to the Mac icon* **A** *for your local network connection. It uses the other address* **B** *on the Internet.*




*If your gateway Mac has a static IP address, you're all done. However, if the gateway Mac gets a dynamic address from your ISP, you have to disable the gateway's DHCP server. In the Vicomsoft Local Administrator utility, go to the Edit menu, select Preferences, and select the Network tab. Finally, deselect Enable DHCP Serving.*

**More Info:** www.macworld.com/2000/09/features/networking

Learn more about networking products and find answers to your networking questions.

LINKS

**TIP:** *Installing SurfDoubler creates a new TCP/IP configuration called VICOM. You can switch between it and your old configurations by opening the TCP/IP control panel and pressing ⌘-K.*

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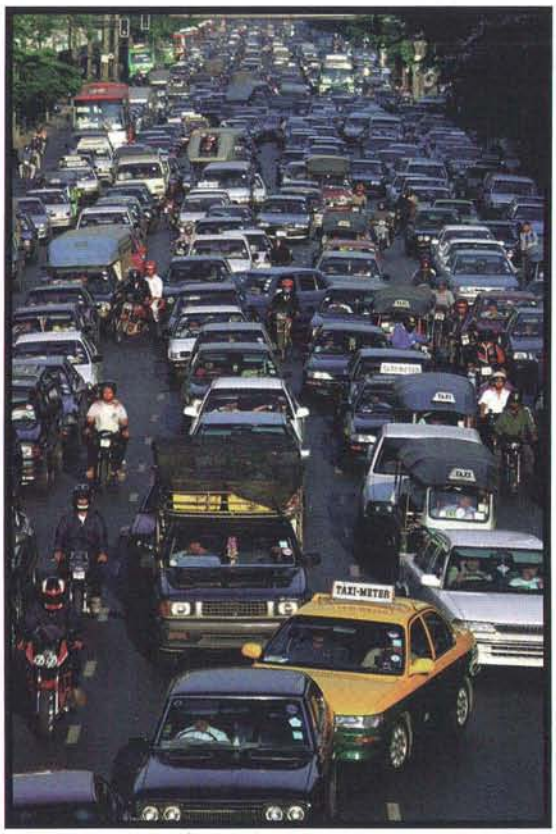


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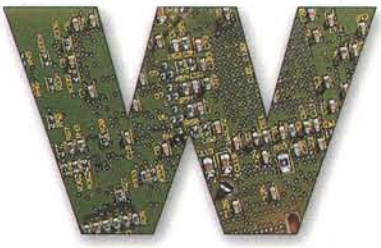
CHRISTOPHER BREEN

# Mac 911





elcome to *Mac 911*, my new home within the pages of *Macworld*. A lot has changed with this issue, so I'll take a second to introduce myself and the column. Longtime readers of this magazine and of *MacUser* may recall that I once penned a portion of *Help Folder*, a question-and-answer column that provided help to readers occasionally perplexed by their Macs. And those who seek assistance on the Internet may know that I've been dishing out daily tips via the Macworld Daily Tips mailing list for a couple of years.

This column is an extension of that work—a place to come for solutions to conundrums both common and arcane. Although I generate plenty of my own problems with my battalion of Macs, I'm far more interested in learning what's troubling you. I also want to read—and publish—your undocumented tips. Please post your questions at the Macworld.com forum (www.macworld.com/mac911) and send your tips to mac911@macworld.com. I can't promise a personal response, but I will read your posts and e-mail messages.

### Queries among the Flowers

Since this is *Mac 911* numero uno, it shouldn't surprise you to learn that the mailbag is completely empty. Fortunately, when in the course of general conversation I mention what I do for a living, people bombard me with Mac questions. Just last week, while meandering along the Northern California coastline, I happened upon a woman cataloging the local flora. She asked how she might create a mass mailing on her iMac without revealing the list of recipients to everyone who received it.

**BCC Is Easiest** I explained that the simplest way to do so is to place her own name in the message's To field and use the BCC (blind carbon copy) field for the recipients. That way, when the message arrives, recipients will see only her name in the To field and no other recipient's name—not even their own. If she sends mailings to this herd on a regular basis, she'll save herself some effort by creating a group containing all the people she'd like to reach and placing this group in the BCC field.

**Groups Are Great** Microsoft's Outlook Express (800/426-9400, www.microsoft.com) e-mail application allows you to create just such a group, but the method differs in Outlook Express 4.5 and 5.0. In version 4.5, you open the Contacts window, click on the Mailing List button to create a new mailing list (that is, a group), and then drag and drop names from your contacts list into your new mailing list. In Outlook Express 5.0, Microsoft changed *Mailing List* to *Group* and *Contacts* to *Address Book*. The Outlook Express crew also changed the way you add members to a group. To do so in 5.0, open the Address Book (⌘-2), click on the New Group button, enter a name for the group, click on the Add button, and type the first few letters of a recipient's name. A menu appears with a list of names from which to choose.

**How to Hide** Both versions allow you to hide the names of recipients when sending a message to a group—just look for the Hide Recipient Names check box in the

*continues*

Contacts or New Group window (see "Join the Group"). With this option, my flowery friend needn't worry about the BCC rigmarole. Although you can create groups with any e-mail client you encounter—even America Online—not all of them let you hide recipients this easily.

### A Musical Matter

Later that week, my band had an engagement where we required the services of a trombone player. Said 'bone guy, Bruce, wondered how members of his own band—who use both Macs and Windows—might electronically swap the scores and sheet music they create.

Although you can use the following methods with just about any variety of file, music notation has its particular limitations. For example, unlike ASCII text, video, and graphics files, music-notation files don't have any standard format. When you create notation files in one application, you can rarely open them in another notation program. Therefore, your recipients can't *edit* as well as read these files unless they have the right program—for example, if you create the file with Coda's Finale, the recipient must use the PC version of Finale.

**Pricey PCs** But there are a couple of ways to send read-only files. If Bruce and his band have some bucks, I suggest they look at Adobe Acrobat 4.0 (888/724-4508, www.adobe.com). Using Acrobat, the boys and girls in the band can create PDF files that the free Acrobat Reader application can read on both Macintoshes and Windows systems.

Unfortunately, at 249 simoleons, Acrobat is a bit pricey for this kind of thing. My more parsimonious readers may yodel, "Use James Walker's $20 shareware extension PrintToPDF instead!" Normally I'd offer this suggestion an encouraging chuck under the chin, but while it's a reasonable solution for many text documents, it won't work for music-notation files—for the simple reason that PrintToPDF (www.jwwalker.com) doesn't support notation fonts.

**Save As a Graphic** For the *real* skinflint, I have two suggestions. The first is to save the notation file in a graphics format. Finale lets you save its files as EPS (PostScript) documents, and Sibelius's eponymous software offers PICT as a Save As option. Graphics applications such as Adobe Photoshop can convert EPS files into formats Windows can read—TIFF, GIF, or BMP files, for example—but if you lack such an application, Art Age Software's $25 EPStoPICT (206/780-8220, www.artage.com) will take you halfway there by turning the EPS file into a PICT file. Windows can't read PICT files, but once you save a file in PICT format, you can use Apple's $30 QuickTime Pro PictureViewer (408/996-1010, www.apple.com/quicktime) to export the file to a PC-compatible format.

**Join the Group** Create a group and hide its members in Microsoft Outlook Express 5.0.

**Put It on the Web** Another solution is to save the notation file as a graphic, insert it into an AppleWorks or Microsoft Word document (or any program that allows you to save files as HTML), and save it as an HTML file with accompanying GIFs or JPEGs. Any Mac or PC browser and many e-mail programs can read these files, and you can post the images on the Web.

**Don't Forget the MIDI** Additionally, I advise Bruce and his band buddies to include a Standard MIDI File (SMF), which any PC or Mac can play, along with the notation file so other band members can hear how the entire arrangement sounds.

### Dancing with Myself

But enough about me. As much as I enjoy hearing the anguished tales of Mac users I meet at random, I'd much prefer to hear what's on *your* mind (and Mac). Please drop me a line—I'm here to help. **m**

For more tips and tricks, subscribe to Contributing Editor CHRISTOPHER BREEN's Daily Tip and iTips newsletters at http://lists.macworld.com.

## Tip of the Month

Type **file://** into Microsoft Internet Explorer 5.0's Address Bar and watch it display your local hard drive's contents. You can then browse through your folders and even view some files directly in your browser. Another handy tip: type **file://*./** to see all the servers in your zone.

**Ed Hargreaves**
*Kennewick, Washington*

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# LiveMotion

## Web Graphics and Animation Tool Has a Familiar Face but Can't Match Flash for Advanced Interactivity

LIVEMOTION 1.0

**Rating:** ★★★½

**Pros:** Broad range of export options; flexible time-based animation.

**Cons:** Limited features for text and advanced interactivity; sound-looping bug; can't zoom below 100 percent.

**List price:** $299

**Company:** Adobe Systems, *800/833-6687*, **www.adobe.com**

MACWORLD'S BUYING ADVICE:

Despite its shortcomings, there's a lot to like in LiveMotion 1.0. Its time-based animation scheme is superior to Flash 4's frame-oriented approach, and its ability to create rollovers and other non-Flash interface elements makes LiveMotion a versatile addition to any Web designer's toolbox.

For better or worse, the Web has become an animated place. From buttons that mutate when you point at them to elaborate Macromedia Flash–based interfaces with pulsating soundtracks, motion and eye candy are all the rage.

LiveMotion 1.0 is Adobe's newest eye-candy factory, and it's a great place to make motion. The program has received a great deal of attention because it's the first non-Macromedia animation product to support the Flash (SWF) file format, letting you create Flash projects without having to buy (and learn) Flash 4 (see *Reviews*, October 1999). Some people have even dubbed LiveMotion a "Flash killer," but Flash need not seek police protection just yet. LiveMotion can't match Flash 4's advanced authoring features, and it lacks Flash's vast constellation of third-party developer resources.

But what LiveMotion lacks in Flashiness, it makes up for in versatility and ease of use. You can create simple rollovers, GIF animations, and interactive Flash projects, all within an efficient interface that's easier to learn than Flash 4's.

### Looks Familiar

LiveMotion will feel familiar to users of Photoshop, Illustrator, the now-defunct ImageStyler, or After Effects. It often feels like a hybrid of these programs, and it's this happy amalgam that makes LiveMotion so versatile—and, for some projects, preferable to Flash 4.

In the bitmap realm, LiveMotion supports Photoshop filters and lets you apply them nondestructively—

ANASTASIA VASILAKIS

that is, you can remove a filter's effect and apply a different one without reimporting the original image. You can also crop and skew imported images and tweak their brightness, contrast, and saturation—conveniences Flash 4 doesn't offer. And you can import Photoshop documents into LiveMotion and retain their layers; should you need to edit the original image, LiveMotion's Edit Original command launches Photoshop and opens the document. Save your changes, and they're updated in the LiveMotion project.

As for vectors, Illustrator users will be right at home with LiveMotion's pen tool. LiveMotion also imports Illustrator documents, and its Edit Original command works with Illustrator as well as Photoshop.

But LiveMotion's text features fall short of Flash 4's. Unlike Flash, LiveMotion can't create forms with text fields, nor does it support multiple-line text blocks. And like Photoshop 5.5, LiveMotion makes you type and edit text in a separate dialog box rather than directly on your layout—so very 1990s.

### Making Motion

A strong resemblance to After Effects makes LiveMotion a great choice for video motion-graphics designers who are moving onto the Web. More important, LiveMotion's approach to animation is often more flexible than Flash's. In Flash, you create and position keyframes at specific frames in the timeline window. This scheme works well—until you decide to change the frame rate at which your project plays back. If you do, you'll need to manually readjust keyframes to match the new frame rate.

In LiveMotion, keyframes are assigned not to specific frames but to points in time. In a 12-frame-per-second animation, for example, instead of creating a keyframe at frame number 24 (as you would in Flash), you create it at the 2-second point. This makes animation easier, and you don't have to reposition keyframes if you change a project's frame rate. Indeed, you can export the same project with several different frame rates to assess the smoothness of animation at each rate or to create low- and high-bandwidth versions. You can also loop animations and nest them so that one animation plays within another. Alas, a bug prevents sounds from looping seamlessly.

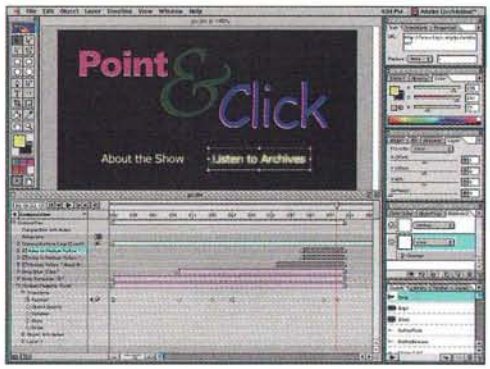
As with After Effects, you design projects in the Composition window with rulers and snap-to guides. You can zoom in for detail work, but unlike After Effects (and Flash 4), LiveMotion doesn't let you zoom out to magnification scales smaller than actual size. This can make it cumbersome to position elements outside of the composition's area.

### Making Interactivity

LiveMotion lets you save an element's attributes as a style that you can apply to other elements—handy for creating the most common Web interface glitz, the rollover. You can create mouse-over, mouse-down, and other rollover states with just a few clicks, and you can use styles to apply your designs to other buttons.

For more-advanced interactivity, LiveMotion provides *behaviors*—instructions that execute when a user clicks on an element or when an animation reaches a certain point in the timeline. By assigning behaviors to elements, you can specify various forms of interactivity: going to a Web page when a button is clicked on, stopping or starting Flash movie playback, and more.

Behaviors in LiveMotion are simi-lar to actions in Flash 4. But LiveMotion lacks a scripting language, and this makes the program inferior to Flash 4 for creating advanced Flash projects.




**Time for LiveMotion** LiveMotion's After Effects–like timeline window (bottom of screen) makes creating animations easy.

### Exporting and Making HTML

LiveMotion does a fine job of creating basic HTML for rollovers, image maps, and embedded Flash projects. It also has a slick batch-replace feature that makes it easy to add LiveMotion-generated elements to existing HTML pages. Similar to its counterpart in ImageStyler, the Batch Replace HTML command searches for HTML elements and then replaces them with LiveMotion-generated elements.

But LiveMotion lacks Flash 4's advanced HTML-export goodies. For example, Flash 4 can create HTML pages containing JavaScript that detects the presence of the Flash plug-in, while LiveMotion's HTML simply embeds the movie. And while Flash 4 lets you create custom HTML templates, LiveMotion doesn't.

LiveMotion also lacks Flash 4's advanced performance-tuning options. LiveMotion's export reports provide some information on download times, but LiveMotion has no equivalent to Flash's Bandwidth Profiler, which gives detailed information on how well a project will download at various connection speeds.—JIM HEID

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# Adobe Illustrator 9.0

## Reigning Drawing Program Offers Revolutionary Flexibility and Conjures Live Effects to Die For

To say that Illustrator 9.0 is packed with tools for creating Web graphics is like saying a jackrabbit is a very fast runner—it had *better* be. The explosion of Macromedia Flash animation on the Web has made Macromedia FreeHand the logical choice for creating the graphics to go with it. To compete, Adobe desperately needed to address the online issue with Illustrator, and it has done an admirable job with version 9. Although Illustrator is no jackrabbit and still doesn't have the upper hand in Web animation, this upgrade offers an abundance of groundbreaking new tools and enhanced flexibility. Only the most narrow-minded Net head will be able to resist giving the new Illustrator a spin.

### Deceiving Appearances

In Illustrator 9's parlance, *appearance* denotes the changeable outer aspect of an object, be it a path, an imported image, or text. This appearance is nondestructive, or *live*, meaning you can edit it or its underlying object independently at any time. Take a circle and totally transform its appearance by piling on the effects; underneath still lies the same simple circle you started out with, ready to be reshaped at your whim. You can conveniently store appearances in the Styles palette, from which they can be called up as needed, edited in the Appearance palette, and reapplied.

You can also apply separate effects to an object's strokes and fills in the Appearance palette. This, in fact, is the key to one of Illustrator 9's most intriguing live effects (though it's woefully undocumented): the ability to create shapes that automatically resize to accommodate the length of the text they contain. Unfortunately, whenever you apply many of the most useful effects, you first have to click the Preview check box to see what you're doing. That gets old fast.

In previous versions, you had to choose your words carefully because when you needed to apply effects to text, you first had to render it uneditable. Now text is just another object, ready to assume any appearance but equally ready to be rewritten. The ramifications of this newfound flexibility

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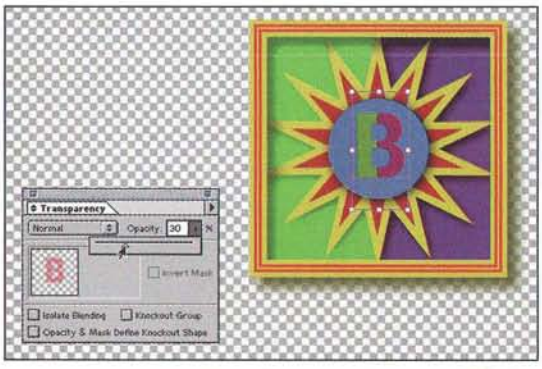



**Grid and Bare It** Photoshop's Transparency grid makes a welcome guest appearance in Illustrator 9.0: the Transparency palette gives you complex control over individual objects, groups, and layers.

ILLUSTRATOR 9.0

**Rating:** ★★★★½

**Pros:** Live effects and transparency; powerful Appearance and Styles palettes; flexible text editing; excellent Web features.

**Cons:** Sluggish; no effects for type on a path.

**List price:** $399

**Company:** Adobe Systems, *888/724-4508*, **www.adobe.com**

MACWORLD'S BUYING ADVICE:

If you want to use a vector-drawing application solely for creating Flash animations, nothing Illustrator has to offer outweighs the great bundle pricing available for FreeHand and Flash (see *Reviews*, July 2000). But Illustrator's newfound flexibility extends its reign as the king of drawing applications for the Mac. Despite an unpleasant decrease in speed, you'll find Illustrator 9 worth the wait.

are profound: it lets you experiment endlessly and make any number of last-minute changes.

### The Clearness of You

Illustrator is hardly the first vector-drawing application to offer transparency, but now it boasts the fullest implementation around (see "Grid and Bare It"). You can make absolutely anything translucent—individual paths, entire layers, strokes, fills, and bitmapped images. To create effects such as a subtle fade over a block of text, you can apply transparency on a character-by-character basis.

Illustrator's new opacity masks are another powerful way to accomplish gradual fades. Designate any object (even an imported bitmap) as an opacity mask, and that object's luminosity will define the transparency for the layer underneath.

### Not Just a Flash in the Pen

With the release of Illustrator 9, Adobe is strongly supporting SVG—a new, completely open vector-animation format that could be viewed as a rival to SWF, Macromedia's Flash format. But in an effort to ensure that all bases are covered, Adobe has also made Illustrator decidedly Flash-friendly. Version 9's Release to Layers command lets you take objects that you've placed on a single layer and instantly redistribute them so that each object is assigned its own layer. From there, it's a snap to export the layers as SWF frames, making Illustrator a great tool for generating Flash animations.

As Adobe will be the first to remind you, however, there's a great deal to be said for a company's cross-application homogeneity, and FreeHand has the home-team advantage when it comes to Flash. Nevertheless, if your focus on Web graphics is broad enough to include GIFs, JPEGs, and PNGs, Illustrator 9 is the place to be. Adobe's efforts to ensure that we're all happily coexisting in the same color space extend well beyond Web-safe colors and hexadecimals; Illustrator 9 offers expanded support for ICC profiles, color proofing, even an Overprint Preview for print folks who don't care a whit about the Web.

### Family Resemblance

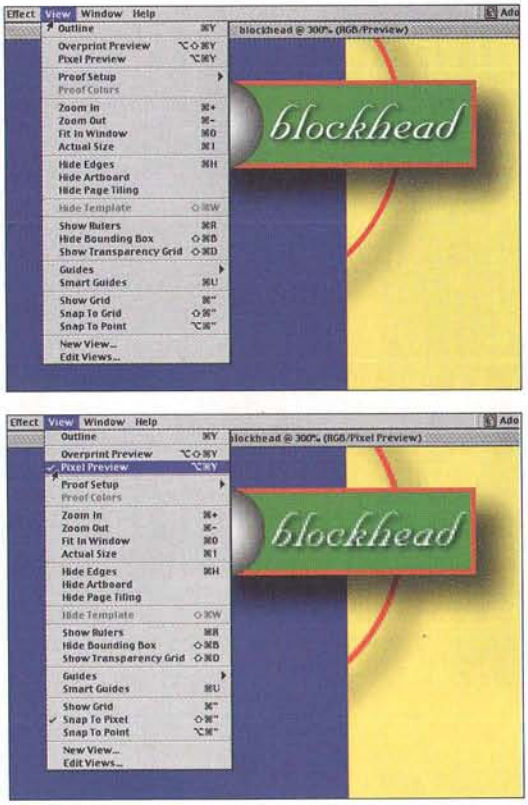
How much you like Illustrator 9's interface will probably depend on how much you use other Adobe programs. Illustrator 9 adheres firmly to the Adobe-standard interface, making it much easier for Photoshop users to learn than the confusing FreeHand. In fact, Adobe has drawn many of Illustrator's new features from its sister applications.

The most welcome of these is Blending Modes, long a vital part of Photoshop. That program's excellent Save for Web window is now an indispensable part of Illustrator's Web tools. For those who prefer roping their points and paths, Illustrator has its own version of Photoshop's Lasso tools. From InDesign, Illustrator inherits its keyboard shortcut editing (though you can't apply skewing effects to type on a path as with InDesign). And After Effects' The Smoother is present as the Simplify Path command, which can retrace your pen-drawn or penciled-in path with fewer points.

### Slow on the Draw

Illustrator's new features might have you dancing in the streets, but you'd better make it a slow dance: live effects and transparency definitely take their toll on performance. If you're upgrading from version 8, you'll be aghast at how long screen-redraw takes when you're working with blends in version 9. (If your blends don't use transparency, following Adobe's advice to turn off the Knockout Group option does indeed decrease redraw times significantly. However, this advice is found only in the Read Me file, and even there it's not explained in any depth.)

You can speed things up by allocating more RAM to Illustrator, but version 9's preferred amount of RAM (46.3MB) is already more than twice as high as version 8's (20.6MB). There's also a palpable sluggishness in day-to-day use, even when you're not taking advantage of version 9's new features. Let's hope Adobe addresses these speed issues soon in a free upgrade.—GALEN FOTT







**Before and Raster** Zoom in with the Pixel Preview and Snap to Pixel commands to see how your smooth vector art (top) will look when antialiased (bottom).

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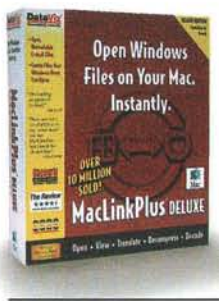


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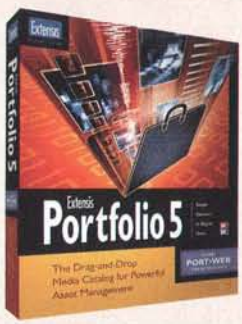


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# Photo-Quality Printers

## Dye-Subs Aren't Dead Yet, but Ink-Jets Have Definitely Arrived

ARNOLD TIOSEJO

The Epson Stylus Photo 1270 (left) and HP DeskJet 932C

With digital cameras becoming ubiquitous and more capable, the need for photo-quality printers has never been more pressing. Although dye-sublimation technology once reigned supreme, today's photo-quality ink-jet printers offer equal or better quality, with a much wider choice of paper stocks. We rounded up ten of the latest and greatest photo printers—seven ink-jets and three dye-subs—and put them to the Macworld Lab torture test. The two clear winners, the Epson Stylus Photo 1270 and the Hewlett-Packard DeskJet 932C, are both ink-jet printers, but one of the dye-subs—the Panasonic PV-PD2100—deserves an honorable mention.

### The Contenders

The three dye-sub printers are limited to a maximum output size of 4 by 6 inches and are generally more expensive than the ink-jets. They are, however, about twice as fast, so if you need to crank out a lot of 4-by-6-inch prints quickly, a dye-sub may be a reasonable choice.

The Panasonic PV-PD2100 produced excellent color, although, like the other dye-subs, it yielded less highlight detail than the ink-jets. It includes a PC Card adapter that lets you print images directly from digital-camera media, and though it lacks a USB interface, it did print successfully through a serial-to-USB adapter.

The Sony UP-DP10 has USB and parallel connections and produced images with decent color but poor shadow detail. The Olympus P-330N, which doesn't have a USB interface, didn't work with our adapter. Phoning Olympus's tech support proved fruitless, and we were unable to print from the iMac. When we finally managed to print through the serial connection from a beige G3, it produced the worst images of any of the printers.

The ink-jet printers are somewhat more flexible in terms of print size and choice of paper stock (with dye-subs, you have no choice of paper). All can print on paper as large as legal size, and the three Epson printers can also print panoramic images as large as 8.5 by 44 inches, using roll-fed paper. Only the Stylus Photo 1270 can manage paper wider than 8.5 inches; its maximum print width is 12.76 inches.

*continues*

Macworld LAB TEST

## Photo Printers Compared

| COMPANY | PRODUCT | MOUSE RATING | LIST PRICE | CONTACT | INTERFACE | MAXIMUM PRINT AREA IN INCHES | PROS | CONS |
|---|---|---|---|---|---|---|---|---|
| **INK-JET PRINTERS** | | | | | | | | |
| Canon Computer Systems | BJC-8200 | 2 | $399 | 800/423-2366 www.ccsi.canon.com | parallel, USB | 9.2 × 22.7 | Good plain-paper text quality. | Complex setup; poor color and shadow detail. |
| Epson America | Stylus Photo 1270 | 4 | $499 | 800/463-7766 www.epson.com | parallel, USB | 12.7 × 43.7 | Excellent image quality. | Poor plain-paper text quality. |
| | Stylus Photo 870 | 3½ | $299 | 800/463-7766 www.epson.com | parallel, USB | 8.2 × 43.7 | Very good image quality. | Poor plain-paper text quality. |
| | Stylus Photo 875DC | 3 | $399 | 800/463-7766 www.epson.com | USB, PCMCIA Type II | 8.2 × 43.7 | Very good image quality; handles wide variety of media. | Poor plain-paper text quality. |
| Hewlett-Packard | DeskJet 932C | 4 | $199 | 800/552-8500 www.hp.com | parallel, USB | 8.5 × 14.0 | Quiet; good plain-paper text quality. | Poor plain-paper photo reproduction. |
| | DeskJet 952C | 3 | $299 | 800/552-8500 www.hp.com | parallel, USB | 8.5 × 14.0 | Quiet; good plain-paper text quality. | Poor plain-paper photo reproduction. |
| Lexmark International | Z52 | 2½ | $179 | 800/539-6275 www.lexmark.com | parallel, USB | 8.0 × 13.4 | Good plain-paper text quality. | Poor color and highlight detail. |
| **DYE-SUBLIMATION PRINTERS** | | | | | | | | |
| Olympus America | P-330N | 1 | $499 | 631/844-5000 www.olympus.com | Video, S-Video, serial, parallel, SmartMedia | 3.4 × 4.5 | None. | Can't print from USB-equipped Macs; poor image quality; limited Mac support. |
| Panasonic | PV-PD2100 | 3½ | $599 | 800/272-7033 www.panasonic.com | Video, S-Video, serial, PCMCIA Type II, parallel | 3.4 × 4.7 | Excellent image quality; flexible connectivity options. | Small image area; expensive. |
| Sony Electronics | UP-DP10 | 3 | $389 | 800/222-7669 www.sony.com | parallel, USB | 4.0 × 6.1 | Small footprint; good image quality. | Poor shadow detail. |



In addition to printing on photo-quality paper, we printed an image and a page of black text on plain paper. The Epson printers produced much better images on plain paper than any of the others, although the results were nowhere near as good as with photo paper, and printing took much longer. But the Epson printers fared much worse with black type; only the HP DeskJet 932C produced text output we'd characterize as good. Although all the ink-jet printers are fine for printing the occasional page in a pinch, they're clearly designed with photographic images in mind; we would recommend only the DeskJet 932C as a general-purpose printer.

When we printed to photo-quality paper, the two clear winners in the ink-jet category were the DeskJet 932C and the Stylus Photo 1270, both of which tied with the PV-PD2100 in our scores for image quality. The DeskJet 952C—which is slightly faster and heavier-duty than its less expensive sibling—and the two remaining Epson ink-jets produced decent-looking images, but the color was pleasing rather than accurate. The Canon BJC-8200 and the Lexmark Z52 received lower scores than the other ink-jets, but they still produced better results than the Olympus dye-sub.

Surprisingly, the DeskJet 932C showed slightly better highlight detail than the Stylus Photo 1270, even though the Epson's six-color ink system is designed to produce better highlights than four-color printers such as the HPs. But the Stylus Photo 1270 produced noticeably better shadow detail than the DeskJet 932C and had more accurate color overall.

### Macworld's Buying Advice

If you want to print great-looking images that will last, the Epson Stylus Photo 1270 is the obvious choice. If you're less concerned with longevity and want to save money, the Hewlett-Packard DeskJet 932C produces good images and also does a decent job on text. If you're satisfied with 4-by-6-inch output and need speed and convenience, the Panasonic PV-PD2100 dye-sub is worth a look.—BRUCE FRASER

**More Info:** www.wilhelm-research.com/2/2.html

For useful information on print longevity, visit Wilhelm Imaging Research's site.

LINKS

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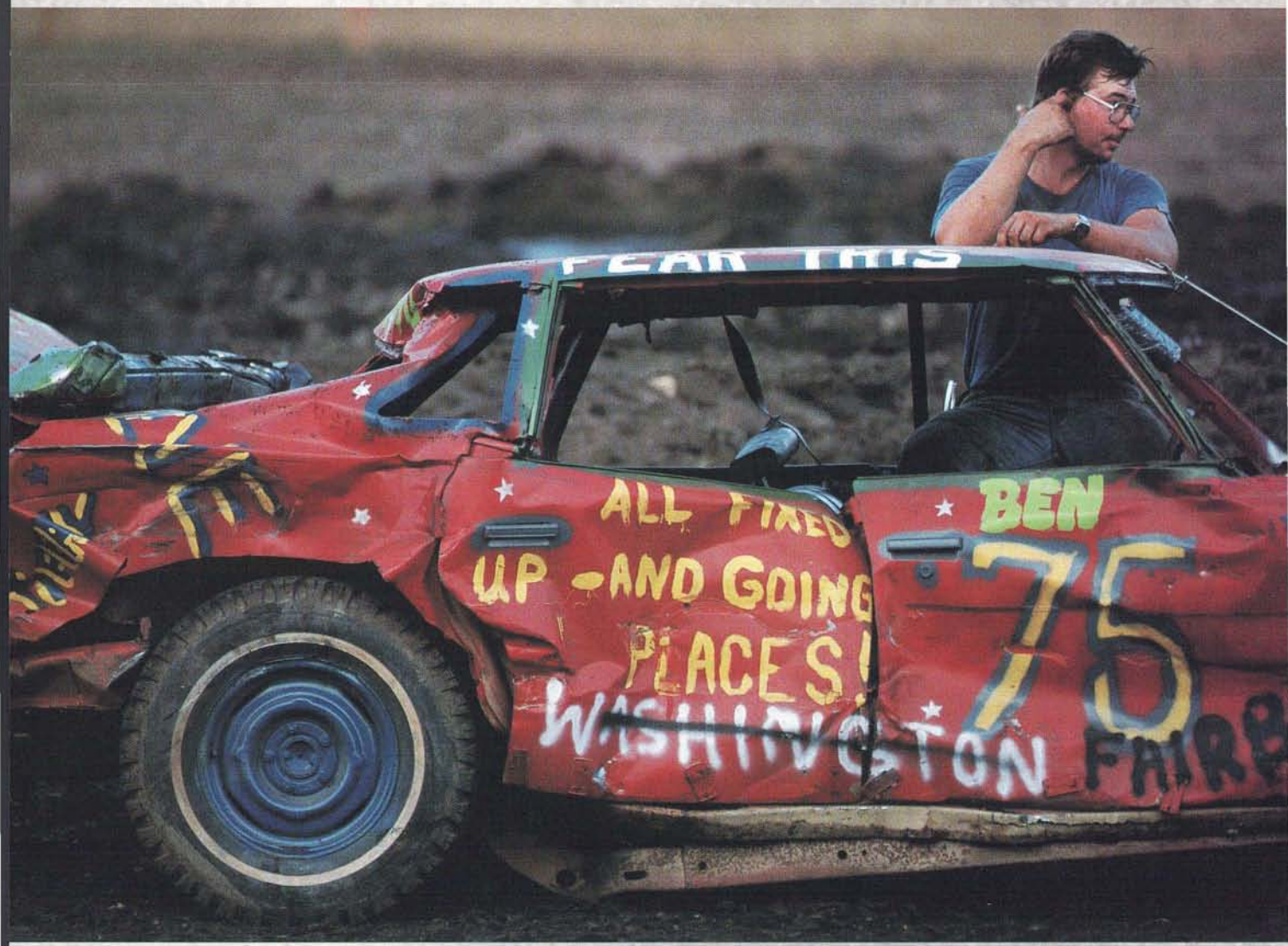

A beat-up negative impresses no one. Fortunately, the Super Coolscan® 2000 film scanner uses Digital ICE™ technology to automatically remove scratches and other surface defects. And of course there are superior Nikkor optics for great image quality, Nikon's Color Management System that ensures color matching, hot swappable film adapters, and auto-feed. This isn't just a scanner. This is one mean machine. 1-800-NIKON-UX.

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# Freeway 3.0

## Web Tool Will Please Designers, Disappoint Web Professionals

**FREEWAY 3.0**

**Rating:** ♦♦♦

**Pros:** Easy learning curve for QuarkXPress users; improved JavaScript Actions; easier integration of graphic and multimedia files into Web sites.

**Cons:** Poor importing of existing sites; produces noncompliant code; limited access to underlying HTML.

**List price:** $299

**Company:** SoftPress Systems, *800/853-6454*, **www.softpress.com**

**MACWORLD'S BUYING ADVICE:**

If you're a QuarkXPress maven, if you consider yourself a designer first and foremost, and if you never want to deal with underlying HTML code, Freeway 3.0 is the Web editor for you. The program excels when it comes to designing new sites, but its importing problems make it the wrong tool for maintaining existing ones or for building sites with lots of dynamic content.

The main strength of SoftPress Systems' Freeway has always been its close adherence to the QuarkXPress interface, making it easy for designers and desktop publishers to transfer their layout and design skills to the Web. With version 3.0, the program offers easier integration with other graphics programs, more and better JavaScript-based Actions, and improved site management. Although Freeway will delight designers, the fact that it still prevents easy access to the underlying HTML code will likely disappoint Web professionals.

### Change Is Only Skin Deep

Freeway 3.0 hasn't changed dramatically from the previous version (see *Reviews*, May 1999). A site created in Freeway is still based on master pages containing elements—such as banners and navigation bars—that are shared across the site's pages. As in XPress, you draw boxes that act as containers for text, graphics, and multimedia and can snap to guides or grids, letting you align page elements easily. The HTML Rectangle tool lets you create boxes to hold normal body text, which you import either with the Import command or by dragging and dropping text from the Finder or another application. Other tools let you link and unlink long text flows between text boxes, and Inspector palettes give you fine control over page, text, and graphic elements.

Freeway remains the leading Web editor in terms of typographic control—for example, you can still convert styled, editable text into a GIF or JPEG, which Freeway automatically antialiases against the page's background color. The program also supports Cascading Style Sheets, giving you great typographic control over HTML text. Unfortunately, Freeway still doesn't generate external style sheets for entire sites. In version 2.0, we found that omission inconvenient; in version 3.0, it's inexplicable.

The most touted new feature is speedier handling of large files.

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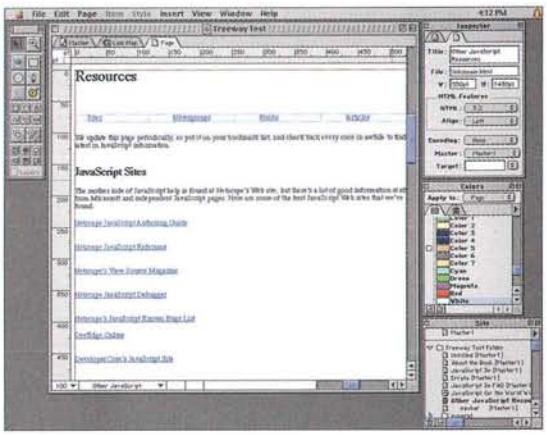


**Homage to Quark** Freeway 3.0 retains its beneficial similarity to QuarkXPress but still fails to import existing sites properly, particularly those formatted using an external style sheet.

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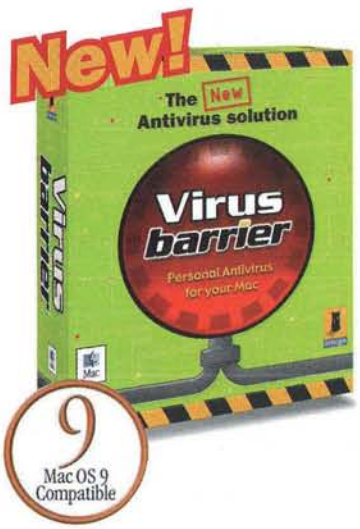


If the Internet is your primary source of information, it is also the main way that viruses are transmitted. Macintosh users need to protect themselves more than ever when downloading files, receiving e-mail and transmitting documents by the Internet.

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# Three-Megapixel Cameras

## New Olympus, Canon, and Epson Models Are No Match for the Latest Nikon Coolpix

If you bought one of the first digital cameras—the ones that created 640-by-480-pixel images—you probably wished you could make high-quality 8-by-10-inch prints on your ink-jet printer (see our review of photo printers elsewhere in this issue). The latest crop of cameras, offering 3-megapixel resolution, lets you do just that. We looked at four recently released 3-megapixel cameras—the Canon PowerShot S20, the Epson PhotoPC 3000Z, the Nikon Coolpix 990, and the Olympus C-3030 Zoom—and found all of them to be capable of giving you that dream print. They all create 9MB files with 2,048-by-1,536-pixel resolution and cost around $800 to $1,000; the differences lie primarily in the types of removable media they use and in the number of images they store.

### A Little Noise

Images from our test cameras exhibited a range of noise, with the Coolpix showing the least amount of noise and the PhotoPC the most. The Coolpix also produced the best images when it came to sharpness, while images from the PowerShot required more sharpening than the others. And the Coolpix produced the best color fidelity of the four cameras. The PowerShot and the C-3030 couldn't match the Coolpix for accurate color, but both were noticeably better than the PhotoPC.

### Spitting Images

All the cameras capture images as JPEGs and offer at least three levels of JPEG compression, and all but the PowerShot can also capture images as 9MB TIFF files (though each camera comes with only a 16MB storage card).

The C-3030 is the only camera we tested that still stores images on SmartMedia cards, which max out at 64MB; the others use CompactFlash cards, which hold as much as 192MB. The PowerShot uses the newer CompactFlash Type II cards, which hold 300MB worth of images, in addition to standard CompactFlash cards.

When it comes to light metering, the Coolpix really stands out. Incorporating the well-known matrix metering system from Nikon's 35mm film cameras, the Coolpix lets you select from four metering options,

*continues on page 110*

KIRK AMYX

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## Three-Megapixel Cameras Compared

| COMPANY | Canon | Epson | Nikon | Olympus |
|---|---|---|---|---|
| PRODUCT | PowerShot S20 | PhotoPC 3000Z | Coolpix 990 | C-3030 Zoom |
| MOUSE RATING | ♦♦♦½ | ♦♦♦ | ♦♦♦♦½ | ♦♦♦♦ |
| COMPANY'S ESTIMATED PRICE | $799 | $999 | $999 | $999 |
| CONTACT | 800/652-2666<br>www.powershot.com | 800/463-7766<br>www.epson.com | 800/526-4566<br>www.nikonusa.com | 800/347-4027<br>www.olympus.com |
| CCD RESOLUTION (in millions of pixels) | 3.14 | 3.14 | 3.14 | 3.14 |
| DEFAULT MEMORY | 16MB | 16MB | 16MB | 16MB |
| REMOVABLE-MEDIA FORMAT | CompactFlash Types I and II | CompactFlash Type I | CompactFlash Type I | SmartMedia |
| STORAGE CAPACITY (in images at maximum image size) * | 6–31 | 1–31 | 1–40 | 1–20 |
| OPTICAL-ZOOM FUNCTION | 2× | 3× | 3× | 3× |
| FOCAL LENGTH (35mm-equivalent) | 32mm–64mm | 34mm–102mm | 38mm–115mm | 32mm–96mm |

* Varies according to compression.

*continued from page 108*

including two varieties of spot metering. While the other cameras don't offer as many metering options, the C-3030 and the PowerShot measure light better than the PhotoPC.

**Macworld's Buying Advice**

Although the latest 3-megapixel cameras have decidedly fewer points of difference and variations in quality than earlier generations, we judged the Nikon Coolpix 990's color fidelity and feature set the best of the four cameras we tested. The Canon PowerShot S20 is the most compact, and its use of the CompactFlash Type II cards is a plus. If the S20's color and sharpness were improved, this camera would equal the Coolpix 990. The Epson PhotoPC 3000Z and the Olympus C-3030 Zoom look bulkier than the other two cameras, but both produce acceptable images.—RICK OLDANO

DiskWarrior® has than

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Winner, Utility Software. "DiskWarrior is an excellent ax to add to your disk-repair and -maintenance arsenal. DiskWarrior's ease of use, speed, and new method of fixing disk problems make it a powerful disk-maintenance product."

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5 Out Of 5 Stars
"Every Mac on the planet can benefit from DiskWarrior!"

Repairs disk problems such as disks that won't mount, files you
Now with DiskShield™ to prevent damage to your disks before it

*continued from page 106*

Freeway does feel more responsive than it did in the past, though it still took us about 20 seconds to open a 650-page site on a G4/400. (Because Freeway now keeps all of a site's elements in one document rather than in separate HTML and image files, it can manage those elements within its own file structure instead of reading the individual elements from disk.) Freeway's new Rollover Editor makes it a snap to create rollover JavaScript Actions, and the new internal JavaScript interpreter can create Actions for such tasks as building DHTML menus and automating features within Freeway.

Freeway now lets you place QuickTime movies, Flash animations, and images in PNG format; you can also import Adobe Photoshop and Illustrator files directly and use Photoshop scanner plug-ins to import images right into your pages. Unfortunately, Freeway lacks a feature like Macromedia Dreamweaver's tracing image—a surprising absence, given the program's design focus.

Freeway 3.0 offers improved site management by giving you a visual display of how your pages link together and by checking your links. But it still lacks file synchronization and a check-in, check-out feature like Dreamweaver's, making Freeway a poor choice for sites maintained by multiple developers.

**Import Woes**

Freeway 3.0 also falls short when it comes to importing existing Web sites. Because the program doesn't interpret HTML properly, it often moves imported page elements from their original positions. For rollovers, Freeway imports only the main image; you must import the missing images and re-create the rollovers using Freeway's own tools. And the program doesn't apply imported Cascading Style Sheets, playing havoc with existing sites that use them. The manual warns that some modification is to be expected, but for larger sites, the effort required simply to get the imported site back to its original shape is prohibitive.

Freeway 3.0 produces decent-quality HTML code, but Freeway-generated pages, which claim in their DOCTYPE header tags that they're HTML 4.0 compliant, fail to pass the World Wide Web Consortium's validation test. Because of the hands-off way the program creates HTML, you can't use Freeway to create sites that fully comply with Web standards. Dreamweaver at least lets you tweak and fix noncompliant code in HTML mode; Freeway doesn't give you that option.—TOM NEGRINO

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# CyberGauge 3.0

## Network Monitor's New High-Level Features Will Appeal to Administrators

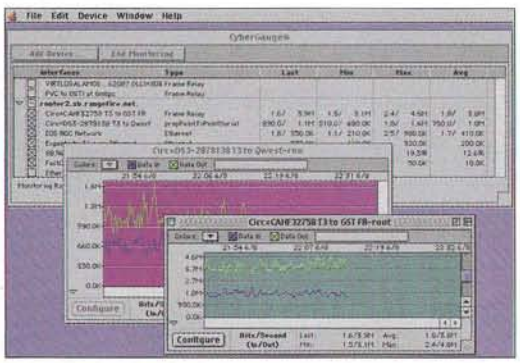
Neon Software's CyberGauge has long been the best entry-level Simple Network Management Protocol (SNMP) tool for monitoring networks. And until now it was affordable, even for small-network users who needed to monitor their Internet routers' traffic statistics. With version 3.0, Neon repositions CyberGauge as a professional network administrator's tool, with high-level features and a price to match.

CyberGauge uses SNMP to collect and display interface statistics from TCP/IP network devices such as routers, switches, and firewalls. The utility can locate routers on your LAN, or you can give it specific IP addresses to monitor. The $295 entry-level version monitors as many as five devices, with an unlimited number of interfaces per device. A customizable graph for each interface plots trends; you can export statistics for analysis in Microsoft Excel or in other Internet traffic-monitoring utilities, or you can save them as JPEG files for automatic publishing via a Mac Web server.

New in this release is the ability to generate e-mail and pager alerts for failed devices or high traffic volume. For example, you can configure CyberGauge to page you whenever outbound Internet traffic exceeds 80 percent of available bandwidth for more than ten minutes. CyberGauge can generate daily, weekly, or monthly HTML-based quality-of-service reports, which record interface uptime, traffic distribution, and bandwidth use, and can calculate percentile usage over time.

The new version also retrieves interface descriptions, and you can edit device and interface names. Other new features let you archive JPEG images, resize graphs, and report text formats.

The only negative aspect of the new release is Neon's elimination of the $139 two-user package. Now the cheapest package is more than twice that price, while the most expensive option still limits you to 20 devices. For a few dollars more you can buy a full-fledged network monitor, such as Dartware's InterMapper (see *Reviews*, June 1998); it has most of CyberGauge's features, supports an unlimited number of devices, and can generate complex network diagrams, to boot.—MEL BECKMAN




**Taking Names and Numbers** CyberGauge 3.0 reports router interface names and traffic statistics to let you identify monitored paths more easily.

**CYBERGAUGE 3.0**

**Rating:** ♦♦♦♦

**Pros:** Inexpensive for a few devices; pager and e-mail alerts; quality-of-service reports; JPEG export capability; no limit on number of interfaces per device.

**Cons:** Low-cost version no longer available; expensive if you have many devices to monitor.

**List price:** 5 devices, $295; 10 devices, $495; 20 devices, $695

**Company:** Neon Software, *800/334-6366*, **www.neon.com**

**MACWORLD'S BUYING ADVICE:**

CyberGauge 3.0's new features make it a useful tool for network administrators responsible for medium-size operations. The program's 20-device limit makes it less useful for large-network administration, but the new quality-of-service reports are perfect for keeping tabs on the cost of Internet service.

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# Disk Drivers

## Disk-Management Utilities Go Beyond Apple's Stock Drivers with Support for FireWire

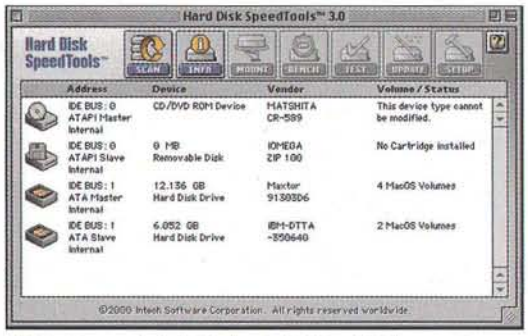
No matter which applications you run on your Mac, a disk driver is always aiding and abetting them. Invisible to those not technically inclined, the disk driver mediates between the operating system and the disk hardware. You're probably using the stock Apple driver that came preinstalled on your Mac, but there are alternatives to Drive Setup. FWB Software's Hard Disk Toolkit (HDT) 4.0, Intech Software's Hard Disk SpeedTools (HDST) 3.0, and Prosoft Engineering's Radialogic 1.8.1 provide formatting and partitioning features, as well as drivers for various needs.

### Beyond ATA

Two factors contributed to the development of third-party drivers and disk-formatting utilities: Apple's drivers worked only on Apple-branded drives, and its drivers weren't always the fastest. FWB Software made a reputation for itself with HDT by providing a fast yet reliable driver that worked with a wide range of SCSI disks, not just Apple's.

Apple's Drive Setup still works only with Apple-branded SCSI disks, but more important, it will work with any ATA (also known as IDE) drive. The ATA driver installed by Drive Setup is plenty fast, with the added benefit of having originated within Apple and undergone testing against current versions of Mac OS. But although every recent Mac has an ATA drive built in, there are plenty of other types of drive (such as FireWire), many of which can't be used with an Apple driver. HDT and HDST have been around for some time, but their new versions are the first to incorporate FireWire support. Radialogic, a newcomer to the disk-utility arena, also supports FireWire.

We tested the three packages' FireWire support, along with that of the default VST Technologies driver, on a 12GB VST drive. Installing the drivers is as simple as putting the driver into the Extensions folder (or letting the installer do it for you); formatting the drives is a similarly simple task. Our benchmark tests showed that the driver didn't make a huge difference in performance and that no single driver was consistently faster or slower than the others.




**All in One** Intech Software's Hard Disk SpeedTools' main window displays all the recognizable devices connected to your Mac.

### Not Just FireWire

Although FireWire is glitzy, there are still plenty of SCSI

*continues*

**HARD DISK SPEEDTOOLS 3.0**

**Rating:** ●●●

**Pros:** Inexpensive; free upgrades; FireWire and SCSI RAID 0 support.

**Cons:** No SMART support; no volume resizing.

**List price:** $50

**Company:** Intech Software, *sales@intechusa.com*, **www.intechusa.com**

**HARD DISK TOOLKIT 4.0**

**Rating:** ●●½

**Pros:** FireWire and SMART support.

**Cons:** Expensive; aging user interface; resizes only HFS volumes.

**List price:** $130

**Company:** FWB Software, *800/581-4392*, **www.fwb.com**

**RADIALOGIC 1.8.1**

**Rating:** ●●½

**Pros:** Supports USB, FireWire, SCSI, and ATA for fixed and removable drives.

**Cons:** No RAID 0 support; wrapper feature doesn't work.

**List price:** $90

**Company:** Prosoft Engineering, *800/656-5443*, **www.radialogic.com**

**MACWORLD'S BUYING ADVICE:**

For most people, the stock Apple drivers will suffice. If you need more, you have several good options. Hard Disk Toolkit is the veteran of the Mac-driver scene. Hard Disk SpeedTools 3.0 is reliable, although it lacks innovative features such as SMART support. And the newcomer, Radialogic, is the most comprehensive package, although it has a few rough edges.

drives out there. All three packages support SCSI, and HDT and HDST let you configure SCSI drives as RAID 0 arrays to improve performance.

The HDT and Radialogic packages also provide encryption features, and Prosoft Engineering claims that Radialogic has a feature called a *wrapper* that works like Mac OS Extended volumes do when they're used with a version of the operating system that supports only Mac OS Standard (also known as HFS) volumes. If you use a Radialogic-encrypted volume with a non-Radialogic driver, the volume is supposed to be user friendly and tell you that you need to use a Radialogic driver. Alas, when we secured a volume with Radialogic and then used the stock VST driver with it, the volume appeared as unrecognizable in the Finder. Even so, Radialogic is the most comprehensive package in that it supports SCSI, ATA, USB, and FireWire for fixed and removable drives, including CD-ROMs.

HDT 4.0 continues FWB Software's tradition of reliability-monitoring features, letting you set HDT to query ATA drives equipped with Self-Monitoring Analysis and Reporting Technology (SMART) to make sure they're hale and hearty. Most modern drives support SMART, so this is useful, especially in server environments.

It's worth noting that these drivers and packages are relevant only to "classic" Mac OS. Mac OS X has a completely different driver architecture that none of these packages claim to support. Although HDT does allow volumes to be resized, it can resize only regular HFS volumes. That was sufficient at one time, but today the ability to resize HFS+ volumes is a necessity.—STEPHAN SOMOGYI



WEB DEVELOPMENT TOOL FOR BUSINESS

# Tango 2000

**Rating:** ♦♦♦♦

**Pros:** Simple visual programming for Web database tasks; rich assortment of preprogrammed actions.

**Cons:** Too complex for simple sites.

**List price:** $495

**Company:** Pervasive Software, *800/287-4383*, **www.pervasive.com**

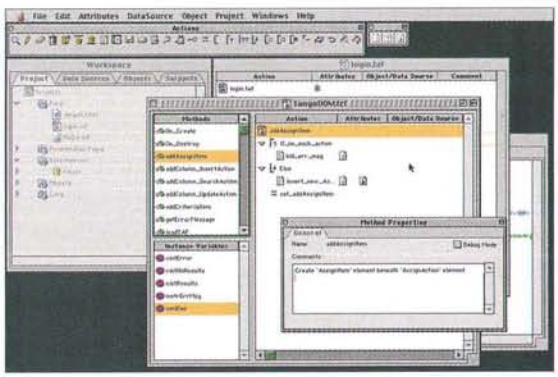
**Macworld's Buying Advice:** Tango 2000 is ideal for posting catalogs to Web sites and handling order and inventory tasks. Its relatively simple programming scheme also makes it easy to modify transaction processing once you've established a site.

All Web tools need to do two things: provide high-level drag-and-drop actions that generate low-level code, and ensure that using those tools isn't more cumbersome than writing the HTML yourself. For simple sites, plain HTML works fine; for splashy multimedia sites, Adobe GoLive and Macromedia Dreamweaver are handy tools. But if you need to post a product catalog or a database that's already in ODBC-compliant format, the tool of choice is Pervasive Software's Tango 2000. This Web connection tool for databases lets you generate actions by selecting a few icons that connect items in your database to entries on your Web page. As a special-purpose Web tool, it succeeds in simplifying a critical business function.

### Programming the Store

The Tango 2000 package consists of Tango Editor, a modern editor adapted to visual programming with Tango icons, and Tango Server, middleware that translates Tango action file (.taf) instructions into code for standard Web servers. Tango's traditional .taf files also now translate automatically into XML for distribution across platforms (and can include Java and C++ modules). But Tango's real strength is that Pervasive has anticipated many standard business needs and packaged the necessary code as icons for use in assembling .taf code. With a few icon selections in the graphical user interface, you can program operations such as selecting an item from a remote database, ordering an item, and updating the inventory database.

Tango 2000 has some nice extras—a thorough tutorial and commercial-grade examples, including a StoreFront that's ready for deployment. Annoyingly, the Mac suite doesn't include Pervasive's excellent Web Analyzer (for real-time traffic analysis). Another complaint is that Web users with slower connections who access Tango 2000–generated pages sometimes see bits of .taf text files as the graphics download.—CHARLES SEITER



**Iconic Control** The icons atop the Tango Editor window are part of a programming language that lets you code Web database tasks just by selecting elements.

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INEXPENSIVE USB VIDEO GETS BETTER

# InterView 2.0

**Rating:** ♦♦♦½

**Pros:** Inexpensive; improved compatibility with other apps.

**Cons:** No printed manual for VideoShop; sound-sync problems.

**List price:** $99

**Company:** XLR8, *770/561-5682,* **www.xlr8.com**

**Macworld's Buying Advice:** If you own a USB-equipped Macintosh and are loath to open it to install a PCI-based digitizer card, InterView 2.0 is the smoothest route to getting video on your Mac.

If you're looking for a hassle-free way to capture video from your camcorder and display it on your USB-equipped Mac, XLR8's InterView 2.0 is the way to go. The latest release fixes bugs and adds a few bells and whistles—such as a utility for capturing the video window and displaying it full screen. Version 2.0 also updates the bundled movie-compression utility and includes a 30-day–evaluation copy of Sorenson Broadcaster. Although compatibility with various video-editing and Web-cam applications has been improved in InterView 2.0, we noted sound-sync problems when we were capturing a clip using Adobe Premiere 5.1c.—JEFFY K. MILSTEAD

INTEGRATED GRAPHICS PROGRAM SLIMS DOWN

# Canvas 7 SE

**Rating:** ♦♦♦♦

**Pros:** Innovative SpriteEffects; good selection of tools.

**Cons:** Huge feature set may intimidate novices.

**List price:** $100

**Company:** Deneba Systems, *305/596-5644,* **www.deneba.com**

**Macworld's Buying Advice:** If you have modest graphics needs, Canvas 7 SE is the best software deal around, with powerful vector and bitmap drawing tools, as well as page-layout and Web authoring features.

In the market for graphics software but hesitant to spend hundreds of dollars? Deneba Systems has just the thing: Canvas 7 SE, a stripped-down version of the company's integrated graphics package (see *Reviews,* March 2000). Like its older sibling, Canvas 7 SE packs a lot of power into a flexible, unified interface that lets you easily mix vector and bitmap graphics in a single document, though the sheer number of features may baffle novices. This version lacks high-end features such as color separation and calibration, but Deneba has wisely left in Canvas's excellent SpriteEffects technology, which makes complex layering and special effects a snap.—BEN LONG

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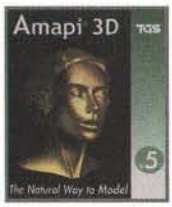


**Rating:** ♦♦♦½

**Pros:** Extensive 3-D modeling features; excellent documentation.

**Cons:** Nonintuitive interface.

**List price:** $399

**Company:** Template Graphics Software, *877/770-2530,* **www.tgs.com**

**Macworld's Buying Advice:** Amapi 3D 5.15 is not for users who aren't willing to read the 468-page manual before trying it. If you invest the time, however, Amapi will reward you with dazzling 3-D models.

If you're looking for an affordable 3-D modeler to create, render, and animate 3-D objects and scenes, your search has ended. Amapi 3D 5.15 boasts a feature set to rival those of more expensive programs, such as the $1,499 form-Z. Among this version's new features are dynamic geometry; surface-smoothing, filleting, and deformation tools; and new (and faster) display modes.

As in earlier versions, you can work in either the standard interface, with its floating tool palette, or in the often inscrutable icon-based Workshop Interface. For more sophisticated animations, you can export your work to another 3-D application in any of 24 formats.—DAVID L. PELTZ

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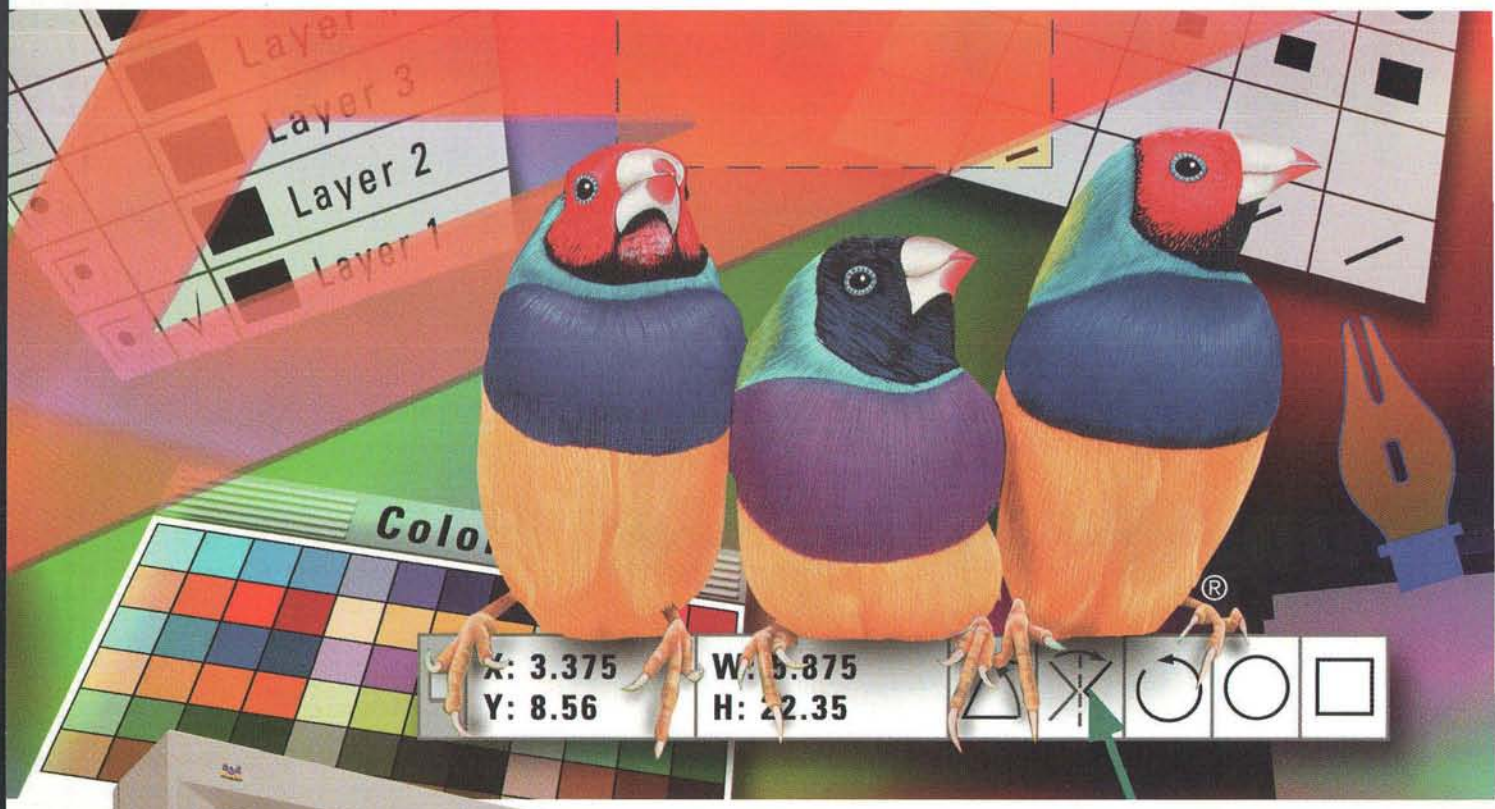


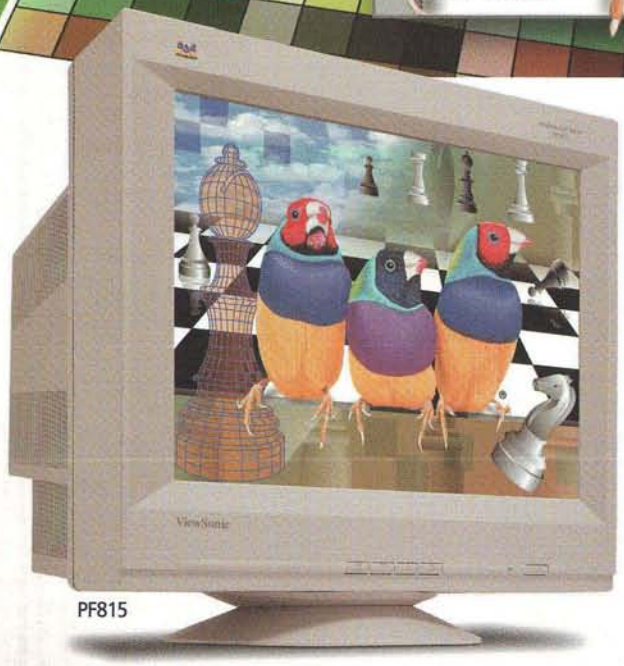


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WEB-CAM SOFTWARE ADDS STREAMING AUDIO

# SiteCam 5.0

**Rating:** ♦♦♦♦

**Pros:** Supports streaming audio; versatile capture features.

**Cons:** Interface has some rough edges; can't handle high-fidelity feeds.

**List price:** $149

**Company:** NuSpectra, *510/523-2267*, **www.nuspectra.com**

**Macworld's Buying Advice:** SiteCam 5.0.1's user interface is still awkward at times, but the program is far more powerful than its competitors and is the program of choice for serious Web producers.

Set up a Web cam, and Web surfers can peer into your world (see "A Web Cam of Your Own," *Create*, December 1999). With NuSpectra's SiteCam 5.0.1, they can also *hear* it: the Mac's premiere Web-cam software now supports streaming audio. SiteCam isn't up to streaming high-fidelity feeds, but it's fine for voice and ambient sound. And visitors don't need a plug-in; SiteCam uses a Java applet for streaming. Other goodies include improved logging to help you track visitors and special tags that let you insert the current time and other information into the pages SiteCam serves. Poubelle Software's $20 Oculus (♦♦♦½; *Reviews*, December 1999) is still easier to use, however.—JIM HEID

REMOVABLE DRIVE MAY BE UNRELIABLE

# FireWire Orb

**Rating:** ♦♦½

**Pros:** Once mounted, it works.

**Cons:** Drivers may conflict with other extensions; must switch on drive first; Orb technology is unreliable.

**List price:** $375

**Company:** Fantom Drives, *310/474-1685*, **www.fantomdrives.com**

**Macworld's Buying Advice:** Although the Fantom Orb drive performs well once mounted, we wish it were truly hot-swappable. We're also alarmed by anecdotal evidence of the Orb mechanism's unreliability.

Fantom Drive's FireWire Orb 2.2GB removable drive is functional, but it's not faultless. The Radialogic drivers conflicted with some common extensions, causing our G3/450 to crash on start-up. Also, the drive is particular about boot order—it mounts only when you first switch on the drive and then boot the Mac. If you boot the Mac first, you must unplug the FireWire connection, turn off the drive, wait 15 seconds, reconnect the FireWire cable, and turn on the drive.

Internet newsgroups are peppered with posts about failed Orb drives. Although it's not Fantom's fault—Castlewood Systems makes the Orb mechanism—this removable-media technology is anything but bulletproof.—CHRISTOPHER BREEN

MAC OS MAIL SERVER DOES THE JOB

# EIMS 3.0

**Rating:** ♦♦♦♦

**Pros:** Low resource requirements; easy configuration; speedy; good anti-spam options; IMAP support.

**Cons:** No alias support; no cross-platform management.

**List price:** $399

**Company:** Qualcomm, *800/238-3672*, **www.eudora.com**

**Macworld's Buying Advice:** EIMS 3.0 is rock-solid server software that runs quickly even on low-end Macs. If you're looking for an easy-to-maintain mail server, this is it.

Its name conjures up a serious piece of software running on a Unix box, but Qualcomm's Eudora Internet Mail Server (EIMS) is a standard Mac application that does everything a mail server should do: it's a POP3, ESMTP, Ph, LDAP, and ACAP server (the latter is Eudora's own autoconfiguration protocol). Version 3.0 also adds IMAP4 capability and processes mail more quickly than version 2.2.2. Unfortunately, this version doesn't rectify all of version 2.2.2's shortcomings, most notably alias support. If you want mail for multiple accounts to wind up in one mailbox, you must create each account separately and then forward each account's mail to its final destination.—STEPHAN SOMOGYI

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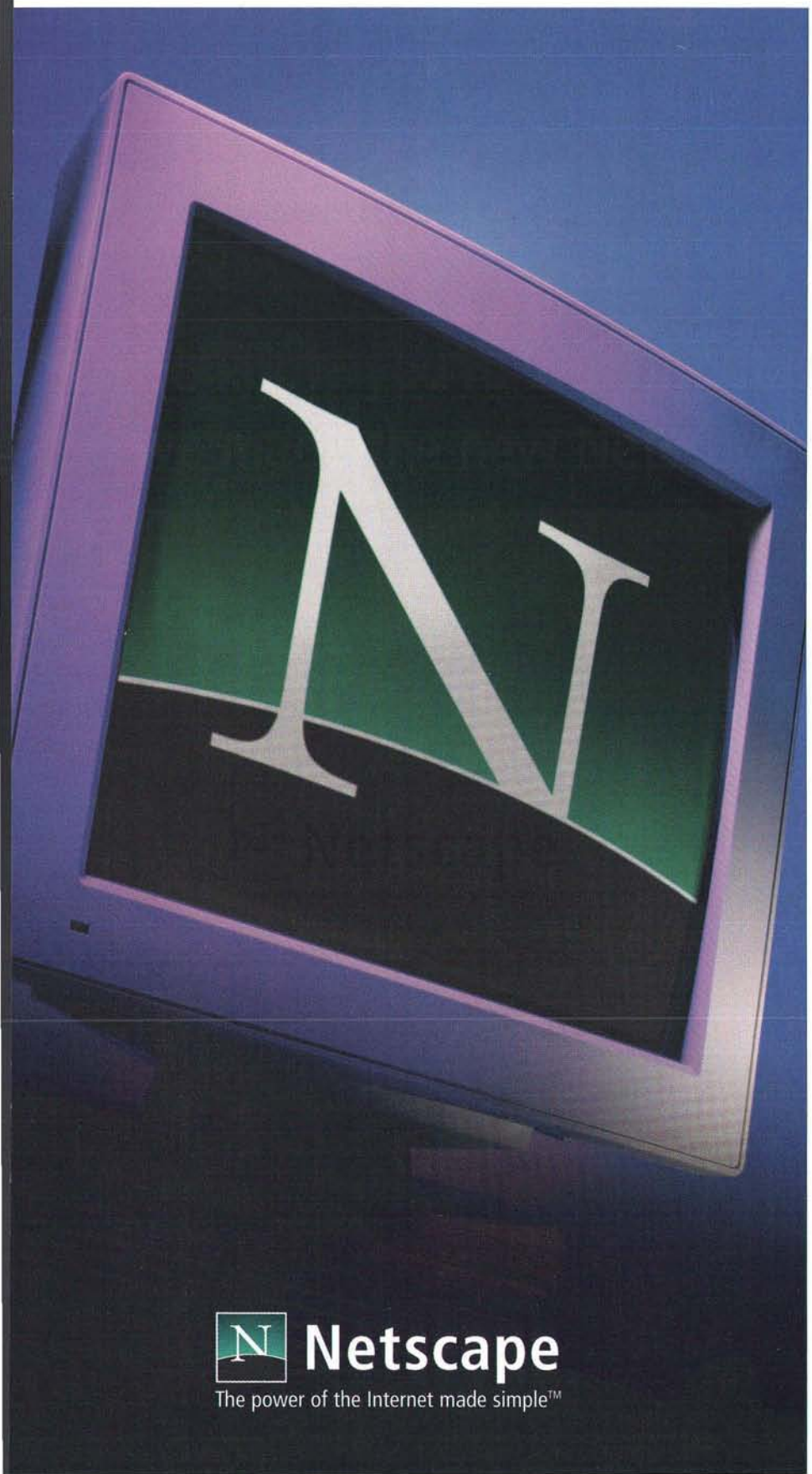

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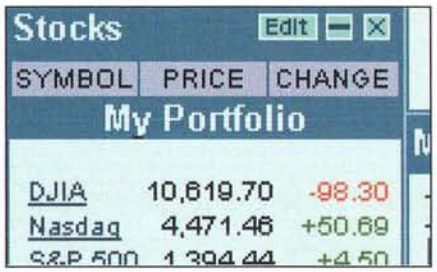


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AUDIO EDITOR IS SLEEK BUT OFTEN SLOW

# Spark 1.5

**Rating:** ♦♦♦½

**Pros:** Well-designed interface; excellent plug-in features.

**Cons:** Often sluggish.

**List price:** $499

**Company:** TC Works, *805/373-1828*, **www.tcworks.de**

**Macworld's Buying Advice:** If you use Digital Performer, you'll love Spark 1.5. Otherwise, you'll need to weigh Spark's superior interface against its inferior performance. If you work with huge files, you'll likely prefer Peak.

If you need to record and prepare tracks for CDs or the Web, or if you're tweaking sounds for music samplers, check out TC Works' Spark 1.5. This professional-level audio editor offers a more polished user interface than its chief competitor, Bias's (www.bias-inc.com) $499 Peak (♦♦♦; *Reviews*, September 1999). Spark 1.5 also has superior audio plug-in features—such as the ability to run VST-format plug-ins within Mark of the Unicorn's Digital Performer—although Peak 2.1 is often much faster at basic editing chores. (For background on plug-ins, see "Make Some Noise," August 2000.)—JIM HEID

AS EXCITING AS BINGO GAMES GET

# Bingo Bingo Bingo

**Rating:** ♦♦♦

**Pros:** Multicard play; adjustable call interval.

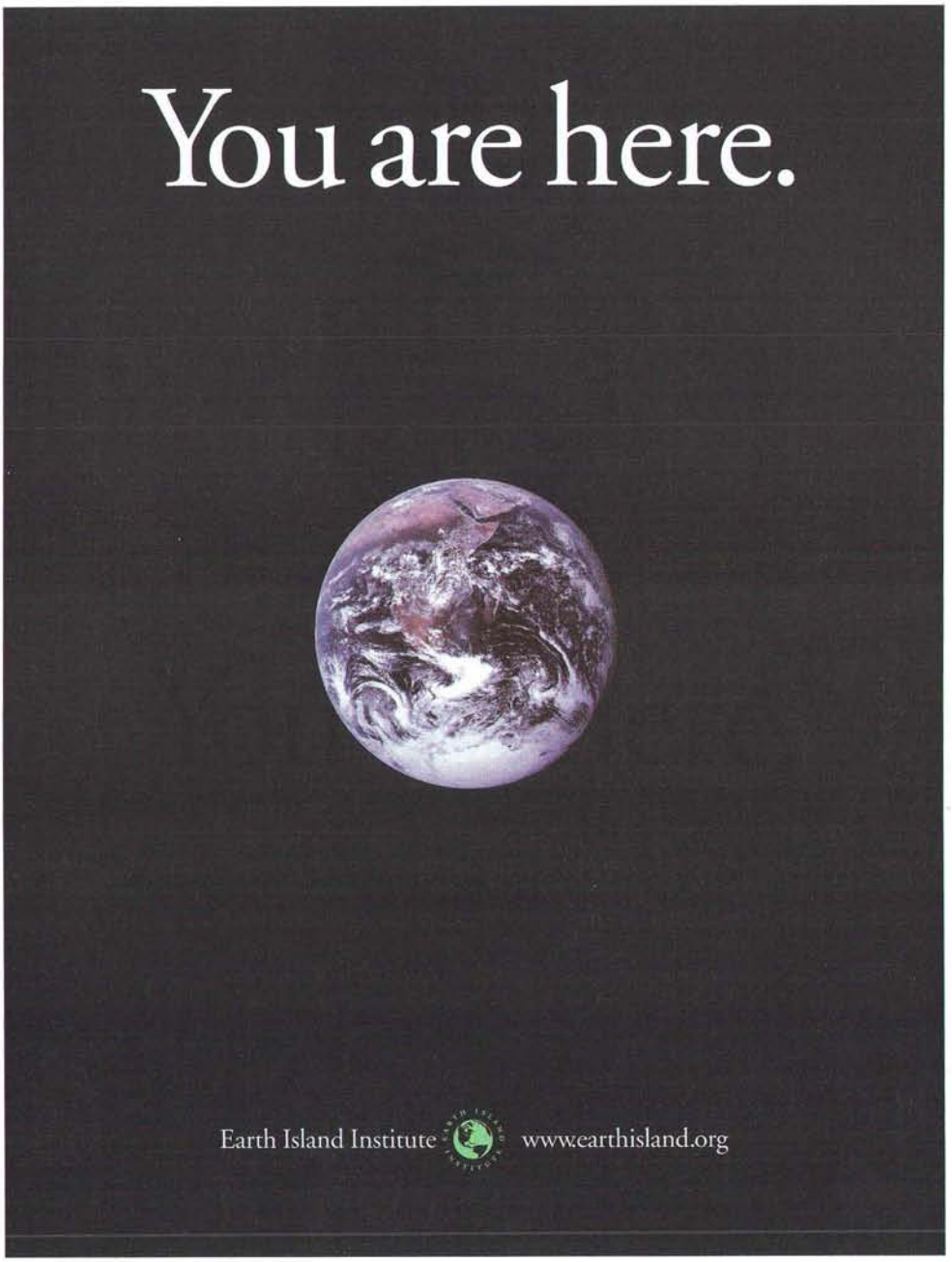
**Cons:** May be dull for those who aren't bingo players.

**List price:** $20

**Company:** MacSoft, *800/229-2714*, **www.wizworks.com/macsoft**

**Macworld's Buying Advice:** If you're into bingo, the multicard and adjustable-speed calling features will help hone your skills. If bingo doesn't float your boat, you may find Bingo Bingo Bingo boring boring boring.

The vast majority of iMac owners don't buy games. However, believing that a portion of these people would if offered the *right* games, MacSoft has brought Bingo Bingo Bingo to the Mac. The perfect companion for die-hard bingo players, Bingo Bingo Bingo lets you play up to six cards against as many as 100 computer opponents. It also offers more than 100 game variations and lets you adjust the interval between calls. The game includes two fairly weak online components—a button that takes you to a site offering bingo paraphernalia, and a link to a site where you can play Java-based games of bingo against other players. Bingo Bingo Bingo itself doesn't support multiple players.—CHRISTOPHER BREEN

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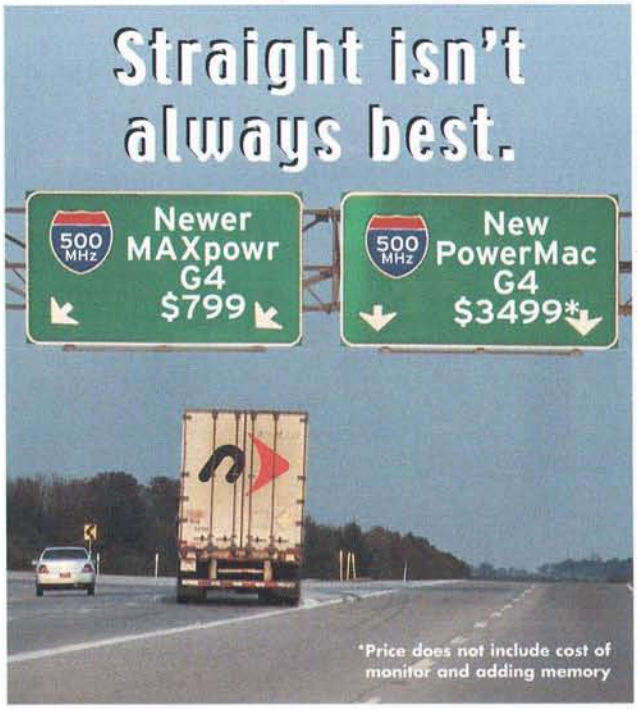


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Two-megapixel digital cameras

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File-sharing server software

4½ **CodeWarrior Discover Programming 5**
Programming application for beginners

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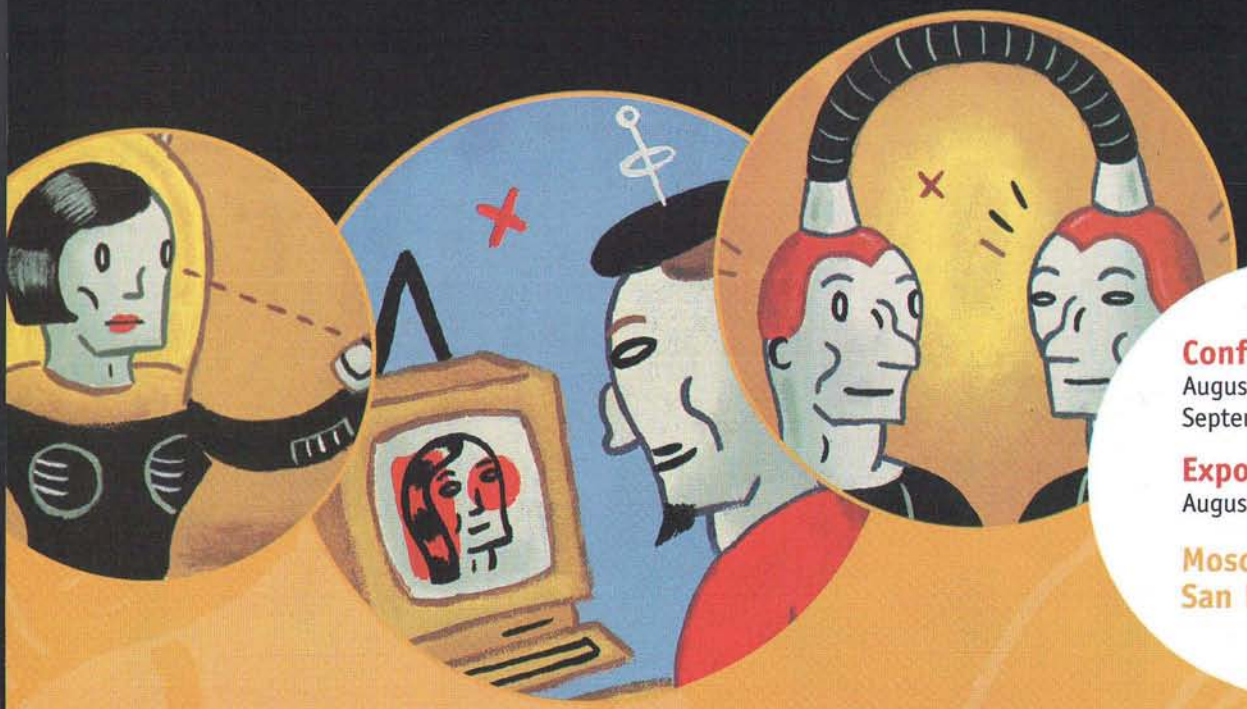

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ANDY IHNATKO

# The Game Room

As a gamer, I'm a trollop, a floozy, a . . . well, you know. In it for the kicks and then on to the next one. I thought I should be up-front about that. You may judge me as you will. That's why I'm grateful the folks at the *Ricki Lake* show never book gamers as guests. Because if they did, at some point I'm sure I'd get lured on camera under the pretense of a free makeover, and only when I was sweating under the harsh studio lights and the harsher vocal judgment of Ricki's audience would I learn that the *actual* show title was "Baby, It Ain't Just Me You've Been Spinnin'! And Whoop! You've Been Found Out."

It's just that in my experience, games rarely end with a sense of completion and utter mastery. Usually, I discover that the game is a panoply of mysteries and secrets, cunningly crafted and skillfully executed, none of which motivates me to continue unraveling them. Or else the game play turns out to be the equivalent of the song "I'm Henry the VIII, I Am," where the sole point seems to be to go through the same bloody routine over and over again, only faster each time. That sort of thing is a lot of laughs on a school field trip, particularly if your group is in the seats above the leaky muffler, but in my office or sitting on the sofa, it just leads to crushing, existential boredom.

### The Games Andy Plays

So it's dashed rare when a game stays on the active playlist in my house for long. It really means something when a title gets permanent space on my hard drive, as opposed to sharing a bin with a bunch of old Intellivision cartridges at the local Goodwill store.

**Alice** There's Alice, for example. It's a showpiece, sitting on display on one of my shelves. I never play it. I never really played it when Apple first published it, back in 1984. To my knowledge, no one has *ever* played Alice. It's utterly and completely unplayable.

But it's historic. Mac architect Steve Capps wrote it. It's the only Macintosh game Apple ever published, and it was the very first piece of commercial Mac software ever shipped. Alice looked like a million bucks, too. It's a small hardbound book that opens to reveal a page of illuminated text and, under a sheet of protective vellum, a disc (bearing the Apple logo) that pops out of its little well with the tug of a scarlet ribbon.

And if you're smart, you'll leave that ribbon untugged. You play the game on a chessboard, where you, as Alice, are one chess piece facing off against the Queen of Hearts and her full squadron. Your objective is to capture all of the opposing pieces using standard chess moves before they capture you.

Unfortunately, those pieces are moving continually, and even a 128K Mac can process moves ever so much faster than a human—which means that in the third of a second you need to figure out how to mouse Alice in a knighty sort of move, your opponents have all dog-piled on you and the game's over.

I've never been sure what the point of Alice was. Surely it wasn't designed as an amusement. I think Apple just wanted to begin the Mac's relationship with its users

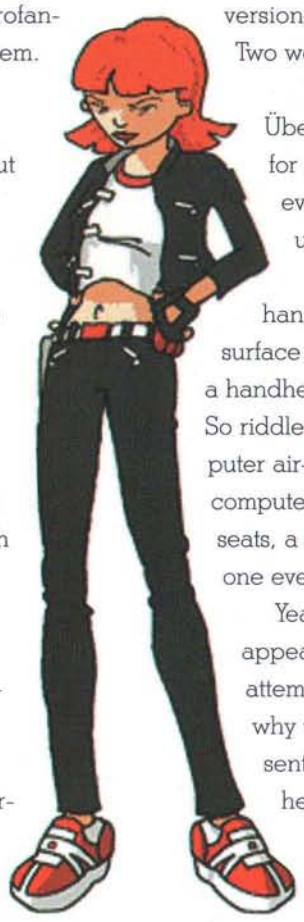
*continues*

by firmly establishing who was in charge. Either that, or the universe needed a whole bunch of new profanities and this was the quickest way to invent them.

**Battle Girl** I first found Battle Girl (www.battle-girl.com) at a Macworld Expo and promptly lost both the game and the name. But when I saw it written up on MacGaming.com some months later, I couldn't get my online order in fast enough, because the $25 Battle Girl is that rarest of gems: an arcade game so impossible that you *have* to keep playing it.

Battle Girl has a story line, but as with all arcade games, this is incidental. In this 2-D overhead-style shoot-'em-up, you fly over the playing field, defending program pods against "reprogramming" by bots. As you climb through the game's levels, better and better doodads defend the bots themselves.

What makes the game such a complete winner is that it focuses on the playing *experience*. It pares things down to the essentials: what you need to do and how you're immediately gonna go about doing it. Visually, it's perfect—absolutely spot-on. It's designed to evoke the tactical display of a fighter ship, so instead of busy patterns, you get clean, clear vector outlines and visual cues of off-screen aggression, as well as flawless animation even on a huge screen.



**Go, Girl!** The cool heroine of Battle Girl.

And it's got a killer soundtrack. I actually listen to Battle Girl's smooth techno-groove in my car!

**Überhocken** Finally, let me talk about Überhocken. Let me eulogize it, actually. As far as I know, it never proceeded beyond the stage of a playable prerelease version—but man, was I ever ready for this game. Two words: *air hockey.*

"Air hockey, you thoroughly silly man?" Yes. Überhocken was, in my opinion, the greatest idea for real-life sports simulation on any computer, ever. Wait! Before you toss this column aside in utter disgust, let me explain why.

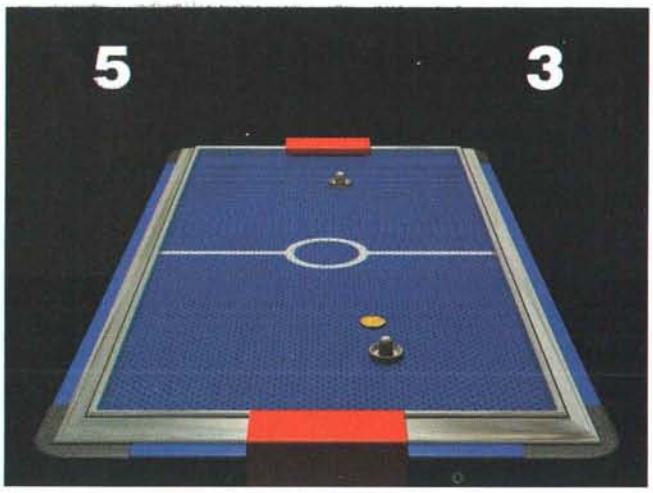
Air hockey is a sport you play by swiping a handheld pucklike thing around the flat, smooth surface of a tabletop. I spend most of my *day* swiping a handheld pucklike thing around a smooth tabletop. So riddle me this—why hasn't there ever been a computer air-hockey craze? It's as though the standard computer input device was a little compartment with seats, a steering wheel, and a set of pedals, and no one ever got around to making an Indy racing game!

Yeah, a hockey-ish game called Shufflepuck appeared many years ago. But after a botched attempt at a color upgrade, it went away. Which is why when Cajun Games (www.cajungames.com) sent me the playable alpha of Überhocken, my heart sang. It was 3-D; it was photo-realistic; and while special wacky tables were available as options, at its core you found real, standard, no-holds-barred Chuck E. Cheese–style air hockey, with all of the physics and strategy but none of the kid- or pizza-related odors.

Unfortunately, it never went farther than what I've got. As so often happens in software development, it was designed with the idea that Someone Else's Code Module would eventually arrive and be a snap to integrate, but it didn't and it wasn't. Like the Soviet Union's space shuttle, it sits as a half-finished shell, a monument to What Could Have Been, perhaps permanently.

But don't call these games my "favorites." Total tramp that I am, my favorite is always whatever game I'm playing right now. To those of you in my audience who disapprove, I think a *Ricki Lake* guest recently came up with a delightful bon mot when she faced a similar situation: "Y'all can kiss my &$%!!!&^$%!!!"

Amen to her gentle wisdom. **m**




**Air Apparent** Yes, Überhocken is exactly what it appears to be—air hockey. What could be more appropriate, given the shape of the modern Apple Mouse?

ANDY IHNATKO is a longtime Mac commentator and columnist. He writes columns for MacCentral.com and the *Chicago Sun-Times* and occasional nontarty bits for *Playboy*. His Web site, www.andyi.com, might actually be up and running by the time you read this.

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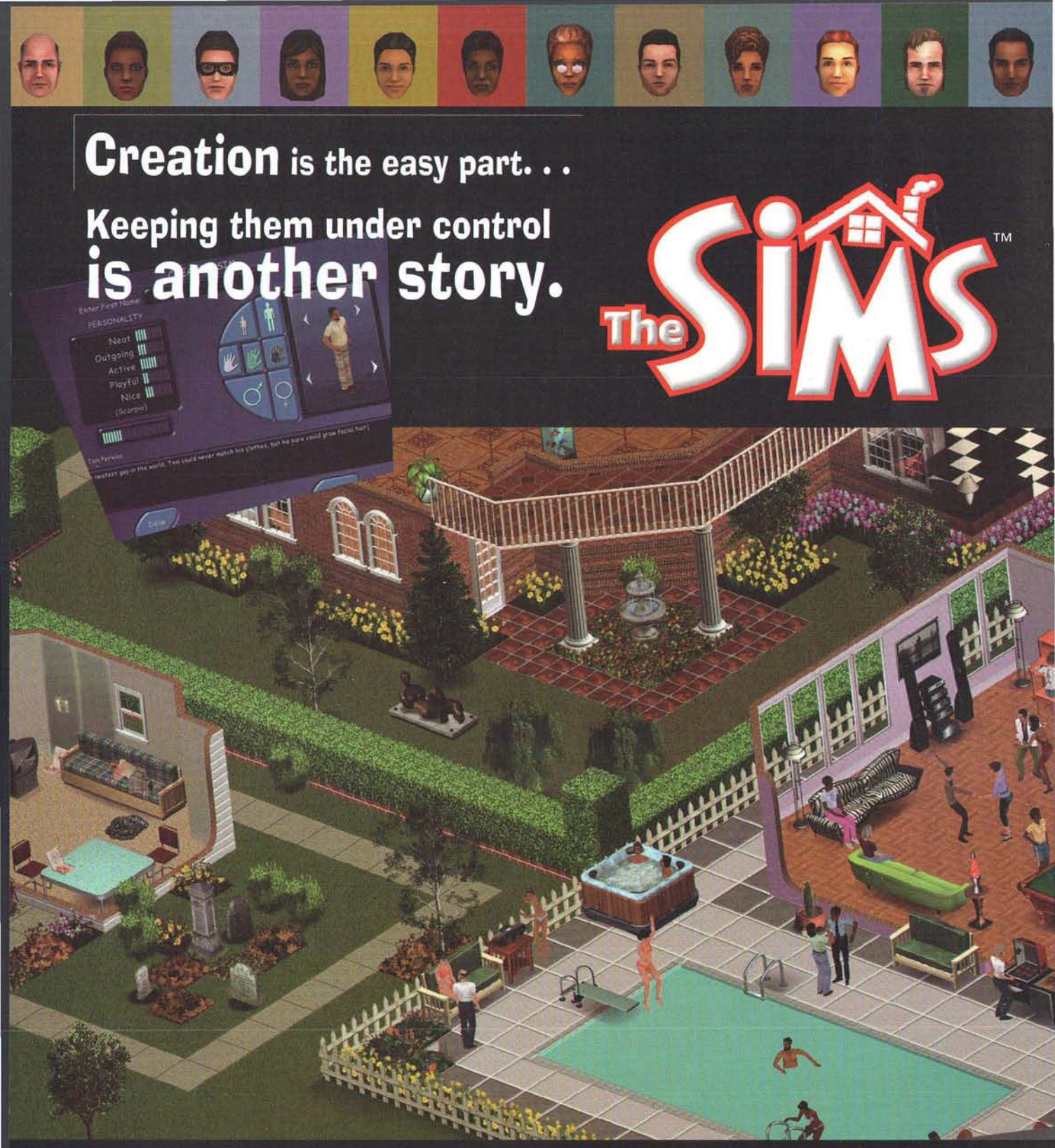


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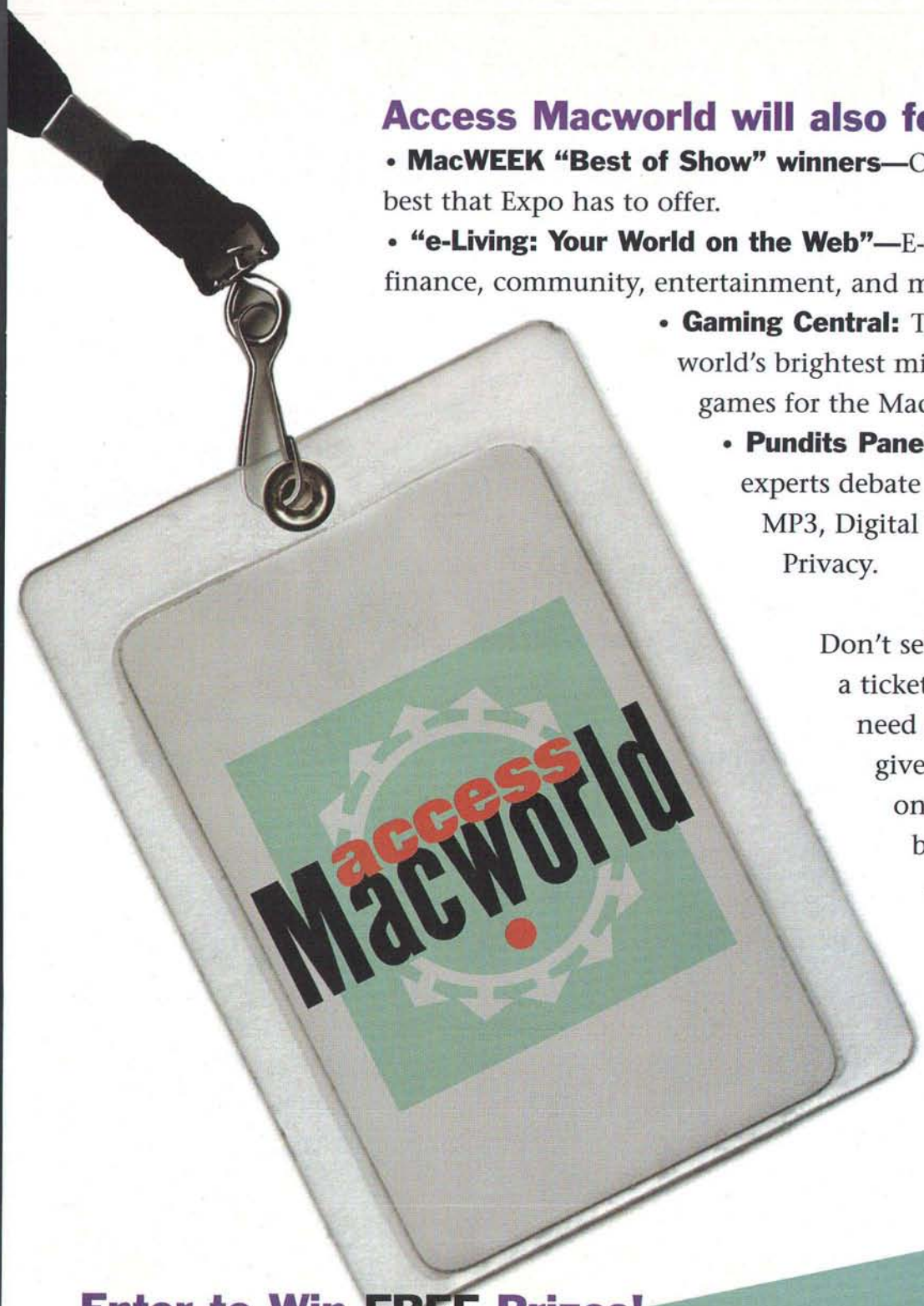


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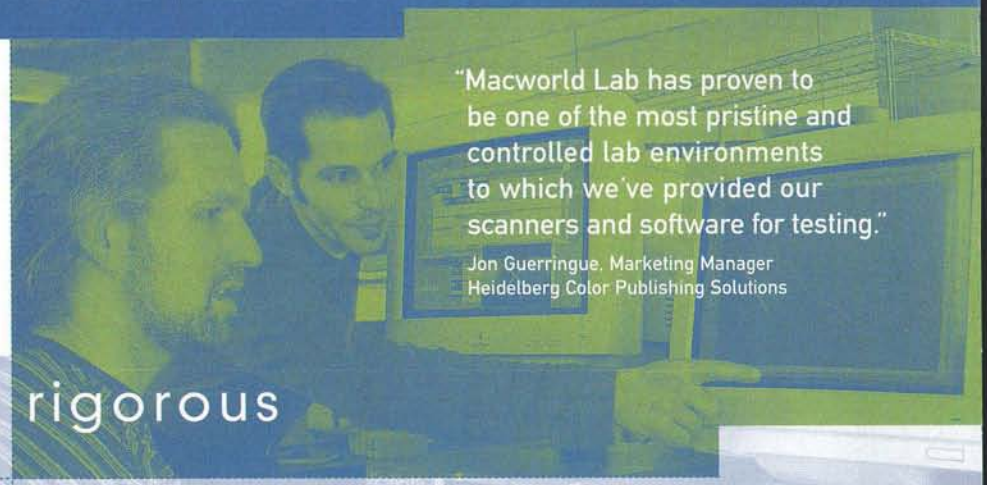

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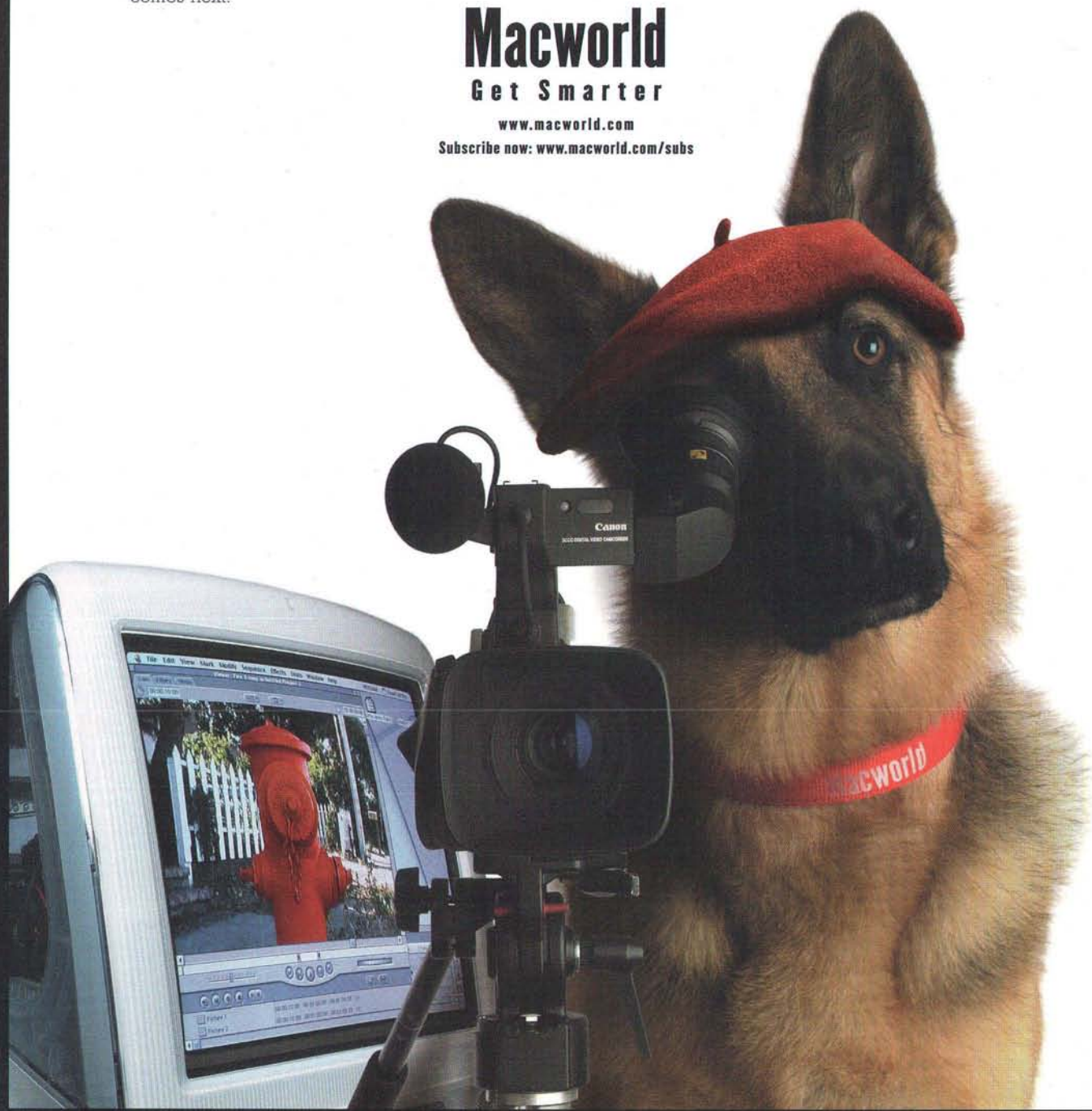


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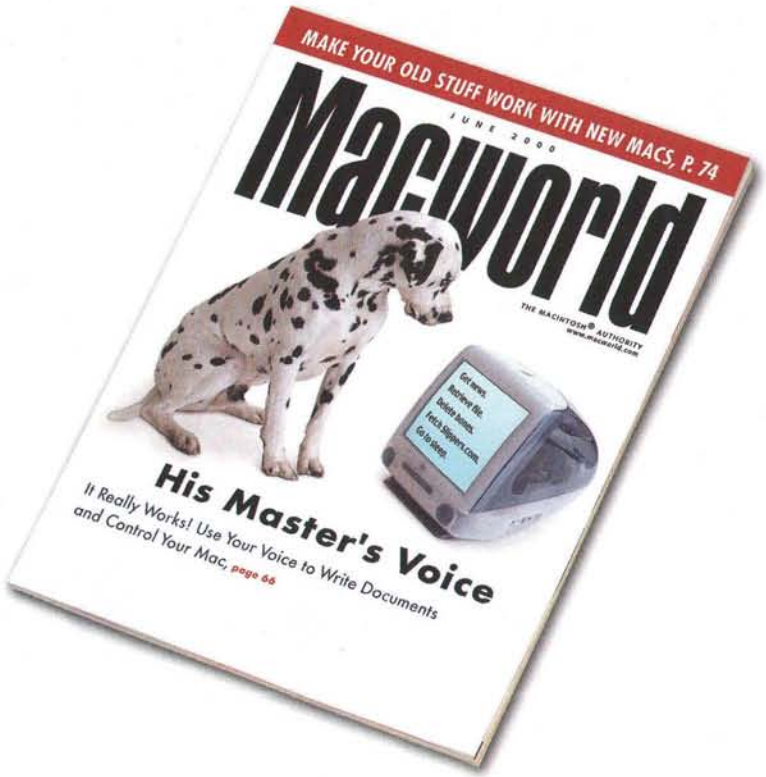


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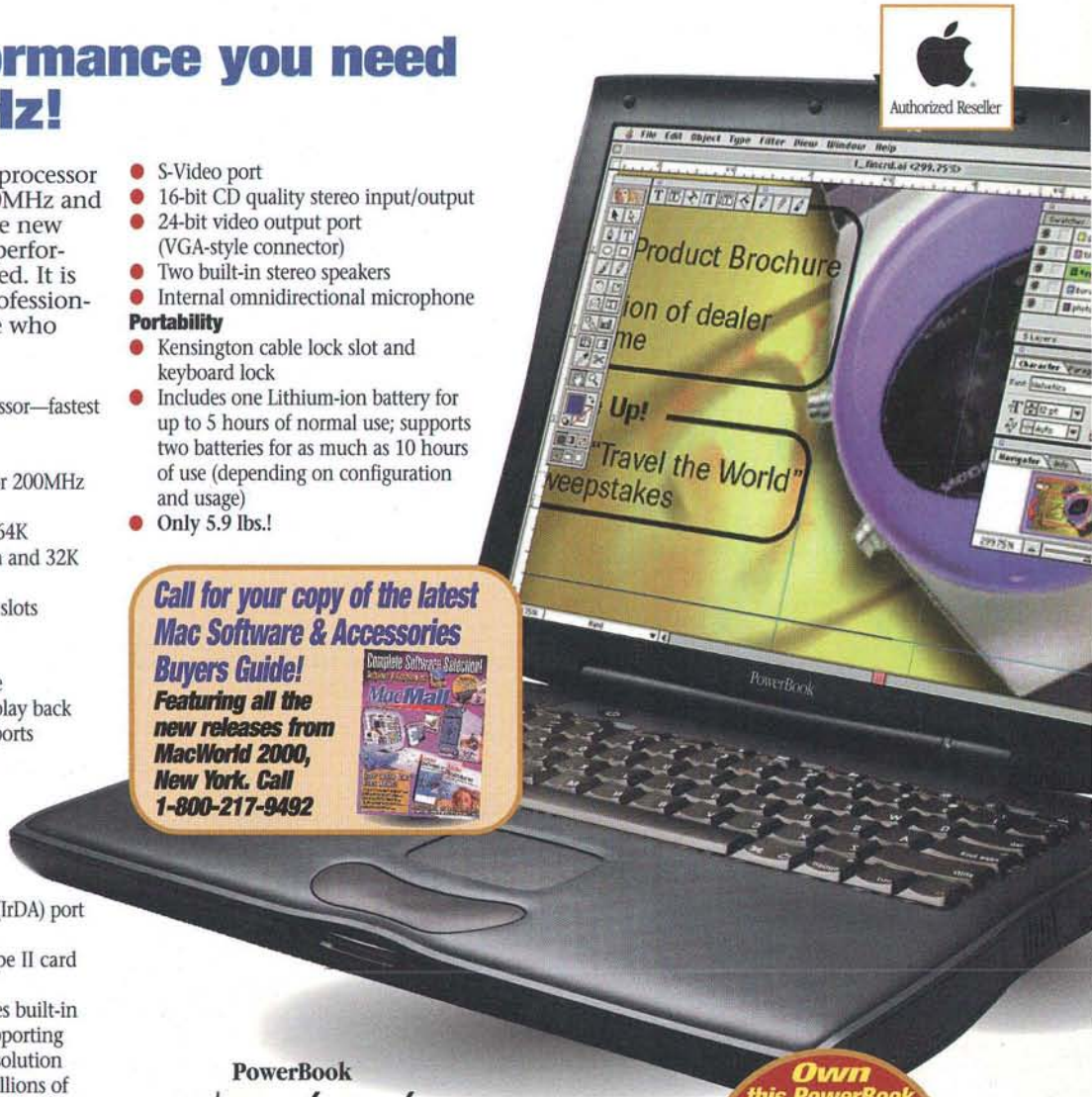


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| Hard Drive | 10GB | 20GB | 27GB |
| Multimedia | DVD-ROM | DVD-ROM | DVD-RAM |
| Zip Drive | N/A | Yes | Yes |
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- 64-bit memory bus

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- Internal 24X (maximum) slot-loading CD-ROM drive or DVD-ROM Drive (DVD is in DV models only)

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- Two 6-pin FireWire ports running at up to 400Mbps (DV models only)

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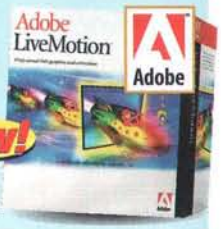


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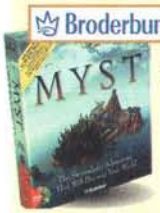


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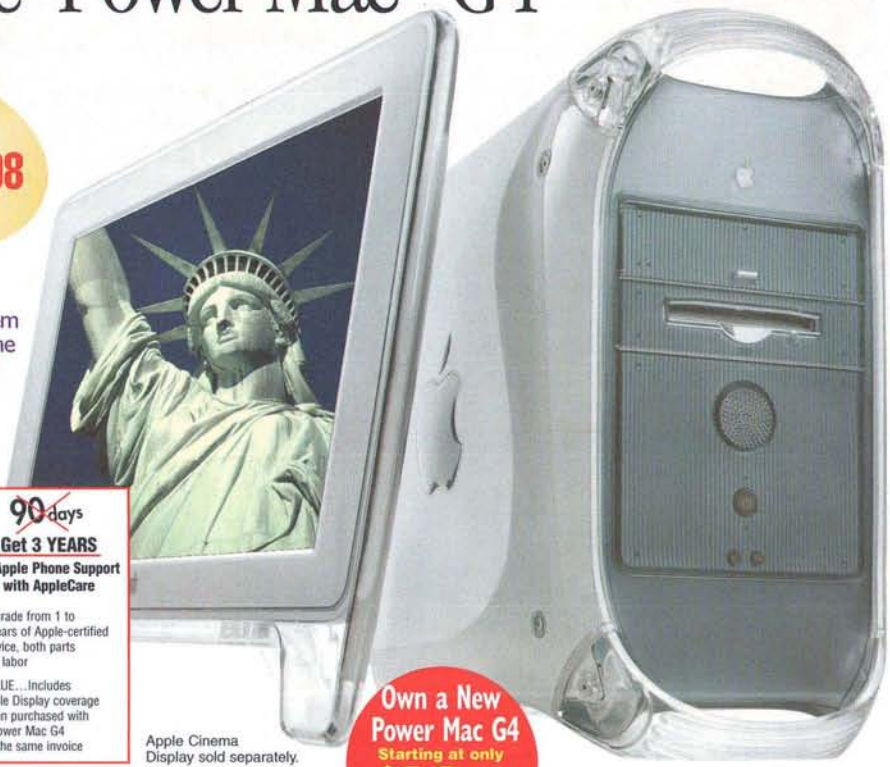

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**Stressing a Variety of Filters**
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| | | |
|---|---|---|
| MacAddict | 29.7s | G4/500MHz |
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**Photoshop Filter Benchmark Tests**
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| | | |
|---|---|---|
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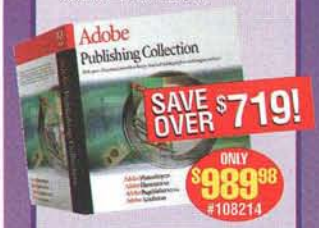


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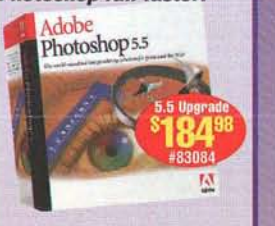


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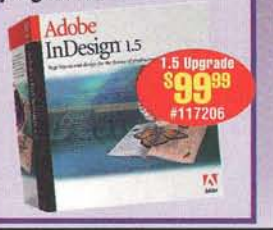


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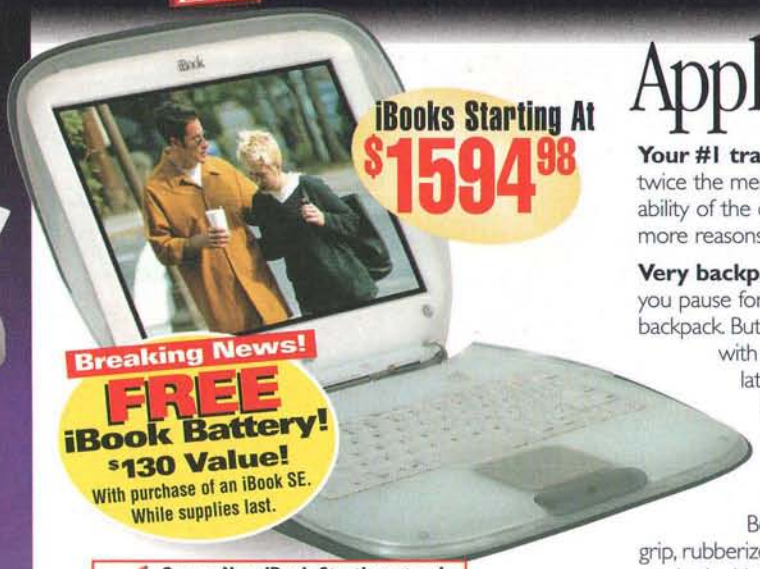

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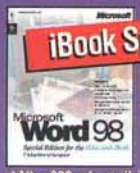

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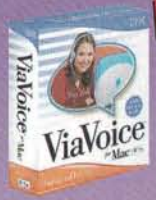

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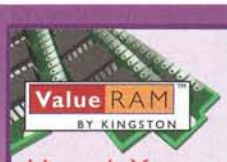


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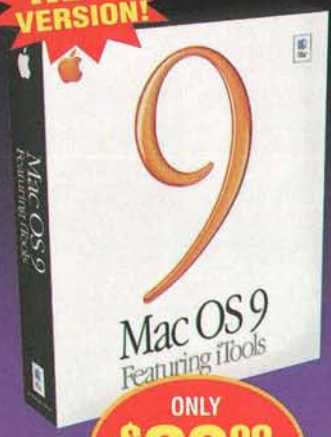


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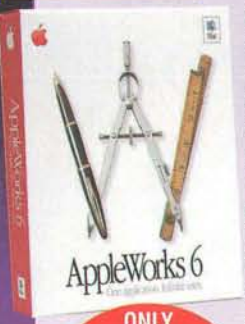


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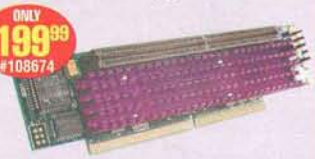

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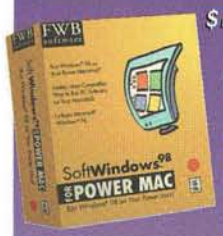


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# Apple Power

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*Based on Apple internal benchmark tests.

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Connectix

## USB Floppy Drive

Available in 7 colors!
Only $84.95!
Item #DR12164

Imation Mac Neon 3.5" Disk 10-pack, only $5.90 (only 59¢ each!), #MED0540

## HP DeskJet 935c Color Printer

Only $199.95!
Item #PR16225

- USB compatible only
- 9ppm blk; 7.5ppm clr • PhotoREt III technology

Black Ink Cartridge, only $29.99, item #67208.

## iMac USB Hubs

Graphite Hub only $39.99! each
Item #VW57882

- Easily connect your USB peripherals to your iMac
- Other colors available, call for details

KEYSPAN

## UMAX Astra 2200 Color Scanner

As low as $159.95!* after rebate
Item #IN8143

36-bit Color!

- USB and SCSI interface

UMAX

*Price AFTER manufacturer's $20 mail-in rebate. Before rebate: $179.95. Rebate coupon available at www.warehouse.com/rebate/umax, or call us at 1-800-390-0706 to request one. Offer expires 7/31/2000.

## 1 Apple iMac 350MHz Blueberry

Only $999!
Item #CPU1492 Lease It for $29/mo.§

- 350MHz PowerPC™ G3 processor
- 512K Backside Level 2 Cache
- 64MB of SDRAM (exp. to 512MB)
- 6.0GB Ultra ATA/66 Hard Drive

- 24x max. slot-loading CD-ROM
- Built-in 56K V.90 modem
- ATI RAGE 128 VR 2D/3D graphics accelerator with 8MB SDRAM (AGP 2X)
- Odyssey audio system from Harman Kardon
- 15" color display (13.8" viewable)
- 10/100Base-T Ethernet • 2 USB ports (12Mbps ea.)
- Support for AirPort 11Mbps wireless networking (antenna built-in; AirPort card optional)

## 2 Apple iMac DV 400MHz

Only $1299! each
Lease It for $38/mo.§

DVD ROM

*Includes ALL the GREAT Features of the 350MHz Model – PLUS –*

- 400MHz Processor • Slot-loading DVD drive
- Movie-making software • Two FireWire® ports
- 10.0GB Ultra ATA/66 Hard Drive

| Blueberry: Item #CPU1493 | Grape: Item #CPU1494 | Strawberry: Item #CPU1495 | Lime: Item #CPU1496 | Tangerine: Item #CPU1497 |
|---|---|---|---|---|

## iDOCK 2 USB MULTIPORT HUB

CompuCable

- Floppy drive
- Swivel Base for iMac
- 4 USB ports
- 2 Serial ports
- 1 ADB port

Only $259.99!
Item #DEH4620

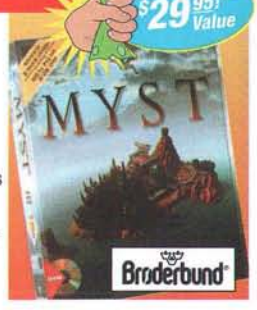
## MYST

FREE* with any purchase from MacWAREHOUSE
Item #AAA0742

- Challenge your puzzle-solving skills in the Island world that is Myst!

*$3.95 shipping and handling applies. Shipped in promotional packaging. Hurry! Offer good while supplies last.
**Value based on MacWAREHOUSE pricing as of this magazine printing.

A $29.95!** Value




PAGE 3 OF 8

## Orbit USB for Mac

Only $49.95!
Ask for item #INP1761.

- Designed specifically for use with USB
- Fits the natural shape of your hand; ideal for right- or left-handed users • Manufacturer's 5-year warranty

KENSINGTON

## HP DeskJet 970cse Printer

Only $399.95!
Ask for item #PR15465.

- 12ppm black • 10 ppm color
- PhotoREt III technology • USB compatible

Black Ink Cartridge, only $29.99, item #67208.

## Sony Digital FD73 Mavica

Only $499.95!
Ask for item #IN7834.

- 10x optical zoom • E-mail mode • 2.5" Color LCD • VGA resolution • Quick Access 2X Floppy Disk Drive • Picture effect • File copy/disk copy

SONY

# iMacs as low as $999!

CALL FOR A FREE FULL-COLOR CATALOG!

Connectix • Sony • VST • Epson • IBM • Farallon • Microsoft

## 3 Apple iMac DV Special Edition

400MHz!

Only $1499!

Item #CPU1498 Lease It for $44/mo.§

- 400MHz PowerPC™ G3 processor
- 128MB of SDRAM (exp. to 512MB)
- ATI RAGE 128 VR 2D/3D graphics accelerator
- 13.0GB Ultra ATA/66 hard drive
- Slot-loading DVD-ROM drive
- Built-in 56K V.90 modem
- 15" color display (13.8" viewable)
- 512K Backside Level 2 Cache
- Harman Kardon Odyssey Audio System
- 10/100 BASE-T Ethernet
- Dual FireWire® ports
- Two 12Mbps USB ports
- Support for AirPort wireless networking (antenna built-in; AirPort card optional)
- Pre-installed iMovie software

## Iomega 100MB USB Zip Drive

New Low Price! Was: $129.95 Now only $99.95!

Zip Disk sold separately. Item #DR9464

**Iomega 100MB Zip Disks** as low as $8.99! each, in 20-pk.

20-pack (gray): only $179.80, #BND3616.

## EtherMac iMac iPrint Adapter with built-in PhoneNet!

Only $104.99! Item #DEP1900

- Connects your iMac to LocalTalk printers and other Macs
- Easy plug-and-play installation

Farallon

Ethernet iPrint Adapter for Stylewriter, only $79.99, #DEP1739.

## SONY PC100 Digital Video Camera

Only $1999.95! Item #IN8595

- 10X Optical/120X Digital Zoom
- IEEE 1394 Terminal In & Out
- 2.5" LCD & Color Viewfinder

SONY

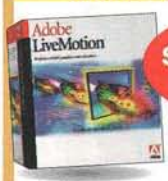
## New! ViaVoice for Mac Enhanced Edition

Only $129.95! Item #BUS1511

- Customized vocabularies that recognize computer, business, and financial terms!

IBM. ViaVoice

## Adobe LiveMotion




Only $289.95! Item #COM1340

- Create professional Web graphics and animation

Adobe

## MICROSOFT OFFICE 98

Microsoft

Includes:
- Word 98 • PowerPoint 98
- Excel 98 • Outlook Express

Upgrade only $249.95! Item #UPG0778

Microsoft Office 98 Full Version BUS1150 ..... $419.95

## EPSON STYLUS COLOR 740i PRINTER

- Blueberry cover standard
- 1440 x 720 dpi with smaller ink drops • 6ppm blk; 5ppm clr
- USB/Mac serial compatible

Other color covers available for only $14.95 each! Call for details.

EPSON

Only $129.95!* after $50 rebate Item #PR15063

*Price BEFORE manufacturer's $50 mail-in rebate is $179.95–$50 rebate=$129.95. Rebate coupon available at www.warehouse.com/rebate/epson, or call us at 1-800-390-0706 to request one. Offer expires 7/31/2000.

Color Ink Cartridge: PA1582 .....$25.99

§ Leases are available to business customers with approved credit on product orders where at least one product totals $750 or more. Payments are based on a 48-month Lease. Leasing terms subject to change without notice. Call for complete details. Other leasing terms available.

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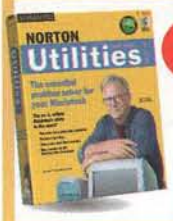
# Authorized Reseller Apple PowerBook G3 —

Apple • PowerLogix • SONY • Imation • 3Com US Robotics • Belkin

## Norton Utilities 5.0




Only $99.95!
Item #UTI1546

- Prevents computer disasters
- Speeds recovery from emergencies

SYMANTEC.

## USB to Serial

Only $59.99!
Item #DAD1665

- Connect serial modems, digital cameras, graphic tablets, printers, and PDAs
- Supports either the Mac modem or printer port

BELKIN

## Palm VII Connected Organizer with Free Serial Kit

Only $449!
Item #BND3824

Features Web Clipping to retrieve stock quotes, and other Internet* information.

palm

*Internet access requires activation and a monthly Palm.Net service fee. Service provided by Palm. See coverage maps for 260 Metropolitan areas at www.Palm.Net.

## Olympus D-360L Digital Camera

1.3 MEGAPIXEL!

Only $299.95!
Item #IN8569

OLYMPUS

- 2x digital zoom • 8MB SmartMedia card included
- 1.3 Megapixel • 1.8" Ultra-bright color LCD

## SupraExpress V.90 56K* Modem

Only $78.99!*
Item #DMD3503

- 56K ITU Standard
- 230Kbps throughput
- Voicemail/Caller ID

*Capable of receiving data up to 56Kbps. Actual send and receive speeds may vary.

PAGE 5 OF 8

## HP LaserJet Printers

As low as $789.95!

### HP LASERJET 2100M

- Prints 10ppm
- 1200 dpi resolution
- HP PostScript Level 2
- LocalTalk connectivity

Item #PR14691

Black Toner Cartridge (2100): Item #PA1871, only $89.99

HP LaserJet 2100 shown.

### HP LASERJET 4050N

Only $1489.95!
Lease It for $43/mo.†
Item #PR14947

- Prints 17ppm
- 1200 dpi max. res.
- 133MHz RISC processor
- Ethernet 10/100Base-TX

Black Toner Cartridge (4050): Item #PR13025, only $85.99

### HP LASERJET 5000N

Only $2079.95!
Lease It for $60/mo.†
Item #PR13443

- Prints 16ppm
- Up to 1200 dpi max. res.
- Prints sizes 3"x 5" thru 11"x 17"

Black Toner Cartridge (5000): Item #PR13742, only $139.99

### HP LASERJET 8000N

Only $2549.95!
Lease It for $74/mo.†
Item #PR13724

- Prints 24ppm
- Up to 1200 dpi max. res.
- 133MHz RISC processor

Black Toner Cartridge (8000): Item #63223, only $155.99

### HP LASERJET 8100N

- Prints 32ppm • 1200 dpi

Item #PR14315 ..... Lease It for $85/mo.† ..... $2929.95

Black Toner Cartridge (8100): Item #PA1662, only $178.99

### HP COLOR LASERJET 8550N

- Prints 24ppm blk/6ppm color • 600 dpi

Item #PR16146 ..... Lease It for $160/mo.† ..... $5599.95

Black Toner Cartridge (8550): Item #PA1644, only $109.99

## MAC OS 9.0.4

Only $99.95!
Item #BND3934

BONUS* iTools from Apple with purchase of Mac OS 9.0.4!

**Features you'll love!**

- Sherlock 2: Easily find people, news, and shopping on-line!
- Easy-to-use, functional interface
- Additional FireWire® and USB support.
- Compatibility with popular search engines such as AltaVista, CNET, Excite, Infoseek, and Lycos
- Plug-ins that search popular sports, financials, and news sites such as CNN and ESPN
- Ability to search multiple shopping and e-commerce sites at the same time
- Built-in Open GL for accelerated 3-D graphics and an improved gaming experience

PLUS...

FREE!** MacLinkPlus Deluxe v11.0 with the purchase of Mac OS 9.0.4.

SAVE $89.95!†

*iTools is a bonus to Macintosh® users running the Mac OS 9.0 or 9.0.4 operating system, and can be accessed at www.apple.com. See box for details.

**Offer good with purchase of Mac OS 9.0.4. Offer does not apply to Multipack, Academic, or other promotional offers. Shipped in promotional packaging. Offer good until 8/31/2000 or while supplies last.

†Savings based on MicroWAREHOUSE pricing as of this catalog printing.

## SONY G500 21" MONITOR

SONY.

- 21" screen (19.8" viewable image size)
- .24 aperture grille
- 2048 x 1536 @ 75Hz with adapter

Only $1179.95!
Item #MON1041

## IOMEGA 100MB ZIP DISKS

Back to school special!

2 FREE* Zip Disks with Zip 100MB 4-pack purchase!

100MB Zip Disk 4-Pack only $47!
Item #ME8899

*2 free disks included in pack. Offer expires 10/3/2000.

## TDK Allspeed CD-Rs

Only 85¢ each, in 150-pack spindle
Ask for item #ME7492.

- 74 min.
- 650MB

TDK.

## U.S. Robotics 56K* V.90 FaxModem

Only $89.99!
Ask for item #DMD3448.

- Manufacturer's lifetime warranty

*Capable of receiving data up to 56Kbps. Actual send and receive speeds may vary.

## Ink cartridges for Epson Stylus Color 740/740i/760/860/1160 4-pack+1 FREE

FREE* InkJet Cartridge with the purchase of an inkjet cartridge 4-pack.

As low as $18.99! each, in 4-pack

*Free cartridge shipped in package.

Black: Item #PA2315 ..... $75.96
Color: Item #PA2317 ..... $75.96

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# up to 500MHz!

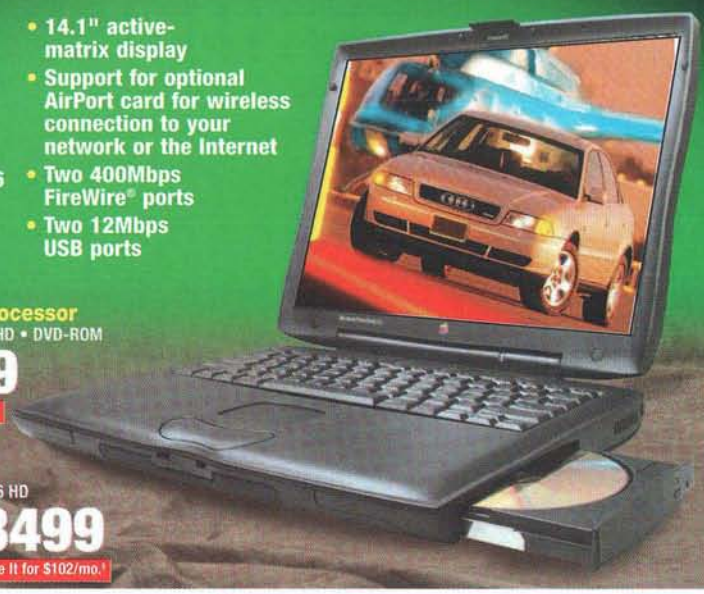
CALL FOR A FREE FULL-COLOR CATALOG!

Hewlett Packard • Palm • Iomega • Olympus • Farallon • Symantec • Targus

## 500MHz PowerBook G3s!

Authorized Reseller

- Up to 500MHz PowerPC G3 processor
- Up to 128MB PC100 SDRAM (expandable up to 512MB)
- DVD-ROM drive
- Up to 12.0GB Ultra ATA/66 hard drive
- 56K V.90 modem
- 1MB Backside Level 2 Cache
- 14.1" active-matrix display
- Support for optional AirPort card for wireless connection to your network or the Internet
- Two 400Mbps FireWire® ports
- Two 12Mbps USB ports



**PowerBook G3/400MHz processor**
• 64MB SDRAM • 6.0GB Ultra ATA/66 HD • DVD-ROM
• 2 FireWire® ports **$2499**
Item #CPU1580
Lease it for $73/mo.§

**PowerBook G3/500MHz processor**
• 128MB SDRAM • 12.0GB Ultra ATA/66 HD
• DVD-ROM • 2 FireWire® ports **$3499**
Item #CPU1581
Lease it for $102/mo.§

## SPECIAL EDITION iBOOK

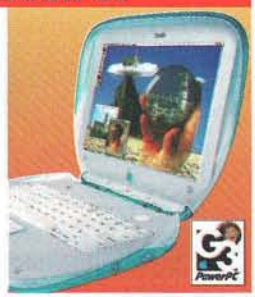
- 366MHz PowerPC G3 processor
- 64MB SDRAM • 56K modem
- 6.0GB Ultra ATA/66 hard drive
- 24X max. variable CD-ROM
- Integrated ATI RAGE Mobility 2D/3D Graphics Controller with 2X AGP
- Supports Airport™ wireless networking (Airport Card and Base sold separately)

**Only $1799!**
Lease it for $52/mo.§
Item #CPU1579

## 300MHZ iBOOK G3

- 300MHz PowerPC G3 processor
- 64MB SDRAM • 56K modem
- 6.0GB Ultra ATA/66 hard drive
- 24X max. variable CD-ROM
- Integrated ATI RAGE Mobility 2D/3D Graphics Controller with 2X AGP
- Supports Airport™ wireless networking (Airport Card and Base sold separately)

**Only $1599!** ea
Lease it for $47/mo.§
Blueberry: #CPU1577 Tangerine: #CPU1578



## POWERBOOK G3 PC100 MEMORY

- New PC100 100MHz memory upgrades for 400MHz and 500MHz G3s

**64MB PowerBook G3 Memory**
**$169.95!** each
Item #CHP1064

Memory prices subject to change.

## AIRPORT CARD & STATION

- Transmits up to 150 feet
- Speeds up to 11MB per second

**AirPort Card for iBook, only $99!**
Item #DEC4142

AirPort Base Station for iBook (shown)
Item #DEB2777 ..... $299

## 120MB USB SuperDisk Drive

Only $149.99!
Item #DRI3350

- Reads and writes 3.5" floppies
- USB & Hot-Swappable

120MB SuperDisk Media 10-pack, only $99.90 (only $9.99 ea.), #BND3239.

IMATION

## Targus Universal Notebook & Printer Case

Only $69.95!
Item #AC28478

TARGUS

- Two individual padded compartments that measure 11"x 13"x 2.5"

## PowerBook G3 Battery

As low as $139.95!
Item #ACC3728

- Lithium-Ion

ACC3728 (fits new 1999/2000 models), only $139.95
ACC3307 (fits 1998 models) shown, only $199.95

## Farallon FastEther 10/100 Adapter

Only $45.99!
Item #DEC3194

Farallon

- 10 times the bandwidth of 10Base-T Ethernet.
- Auto-negotiate to achieve maximum speed or backward compatibility with older devices.

Fast Ether TX 10/100 PCI Ethernet Card 5-Pack, only $219.99, item #DEC3195.

## PowerLogix iMac Upgrade

*500MHz G3 with 1MB Backside Cache*

Only $499!
Item #DRI4150

PowerLogix

- Installs in minutes
- iForce utility included

PAGE 6 OF 8

§Leases are available to business customers with approved credit on product orders where at least one product totals $750 or more. Payments are based on a 48-month Lease. Other leasing terms available. Leasing terms subject to change without notice. Call for complete details.

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# Adobe NEW! Adobe Illustrator 9.0

Apple • Palm • MacSense • IBM • Mitsubishi • Iomega • Microtek

## Olympus C-2020 Digital Camera

4 "AA" NiMH Batteries, Remote, and 8MB Card Included!

New Low Price! Was: $899.95 Now only $699.95!

Item #IN8346

OLYMPUS

- 2.1 Megapixel
- 3X optical zoom • 1600 x 1200 ppi resolution
- QuickTime movie mode (up to 60 seconds)

Olympus P330 Stylus Photo Printer, item #PR14784, only $399.95.

## 64MB SmartMedia Cards

Only $159.95!

Item #MY12482

- Digital film for digital cameras
- Compatible with new digital cameras with SmartMedia slot

## Microtek ScanMaker 4

Only $599.95!

Item #VW60199

- 36-bit color
- 600 x 1200 dpi
- Built-in transparency & slide bay
- 8.5" x 14" scanning area

Snaptrans templates included in Box!

MICROTEK

## PowerUser 12X 80 Min. CD-Recordables

Only 59¢ ea. (in 50-pack, only $29.50)

Item #BN7717

POWER USER

## Palm IIIc Connected Organizer with Serial Kit

Only $449!

Item #BND3825

- 8MB of memory
- Active-Matrix Color Display

## Apple 350MHz iMac

Authorized Reseller

Only $899!*

Item #RCPU1492

WHILE SUPPLIES LAST!

- 350MHz PowerPC G3 processor
- 64MB SDRAM (512MB max.)
- 6.0GB Ultra ATA/66 HD
- 24X max. variable CD-ROM
- 56K modem
- 15" color monitor (13.8" viewable)
- 512K Backside Level 2 Cache
- 10/100 Base-T Ethernet
- Two USB ports

RECONDITIONED

Blueberry, shown.

PowerPC

*Reconditioned system. Reconditioned computers may not include original application software. 90 day parts and labor warranty. All sales final. While supplies last.

## Apple iMac 400MHz DV

Only $1149!* ea.

- 400MHz • 64MB SDRAM • 10.0GB Ultra ATA/66 HD
- DVD-ROM • 56K modem • 15" monitor (13.8" viewable)
- Two FireWire Ports • iMovie Software
- Two USB Ports

RECONDITIONED

Blueberry: #RCPU1493 Grape: #RCPU1494
Lime: #RCPU1496 Strawberry: #RCPU1495
Tangerine: #RCPU1497

## Apple iMac DV Special Edition

- 400MHz • 128MB SDRAM • 13.0GB Ultra ATA/66HD
- DVD-ROM • 56K modem
- 15" monitor (13.8" viewable)
- iMovie Software

RECONDITIONED

Graphite only $1299!*

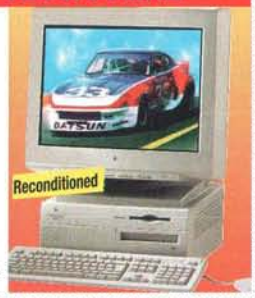
Item #RCPU1498

## POWER MAC 7200/90MHZ

- 90MHz PowerPC 601 processor
- 16MB RAM • 500MB HD
- 4X max. variable CD-ROM
- 3 PCI Slots

Only $399!*

Item #RCPU1471



Reconditioned

*Reconditioned system. Reconditioned computers may not include original application software. 90 day parts and labor warranty. All sales final. While supplies last. Monitor and keyboard not included.

## POWER MAC G4/400MHZ

- 400MHz PowerPC G4 processor
- 64MB SDRAM • 10.0GB HD
- 56K modem
- DVD-ROM

Only $1499!*

Item #RCPU1574

Reconditioned

*Reconditioned system. Reconditioned computers may not include original application software. 90 day parts and labor warranty. All sales final. While supplies last.

## DIAMOND PRO 900u 19" MONITOR

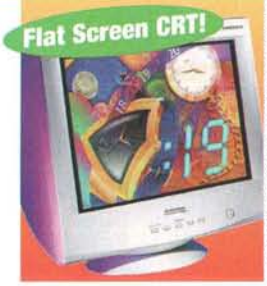
MITSUBISHI

Flat Screen CRT!

- 1600 x 1200 @ 75Hz
- 18" viewable image size
- .25 aperture grille
- Manufacturer's 3-year warranty

Only $637.95!

Item #MON0765



## SONY E500 21" MONITOR

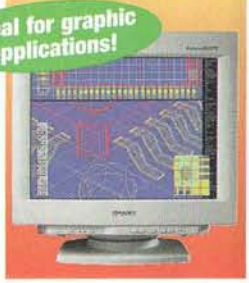
SONY

Ideal for graphic applications!

- 21" monitor (19.8" viewable image size)
- 2048 x 1536 @ 65Hz
- .24mm aperture grille

Only $1069.95!

Item #MT3655



PAGE 7 OF 8

## Jaz 2.0GB Cartridges

Only $99.95! each, in 3+ quantity

Ask for item #MED0508.

iomega

| Quantity: | 1-2 | 3+ |
|---|---|---|
| Price: | $124.95 ea. | $99.95 ea. |

## EPSON ELP 5700i Laser Printer

Only $349.95!* after mfr's $50 mail-in rebate

Ask for item #PR15675.

- 8ppm • Up to 1200 dpi • USB compatible only

*Price BEFORE mfr's mail-in rebate is $399.95 – $50 rebate = $349.95. Rebate coupon in box. Offer expires 1/31/2001.

Toner Cartridge, only $89.95, item #PA2603

EPSON

## MacSense XRouter Cable/DSL Internet Sharing Hub

Macsense

Only $199.99!

Ask for item #DEB2557.

- Supports Mac, PC and Unix
- Built-in 4-port 10Base-T hub
- Connect up to 250 users using one ISP account and a cable/DSL modem

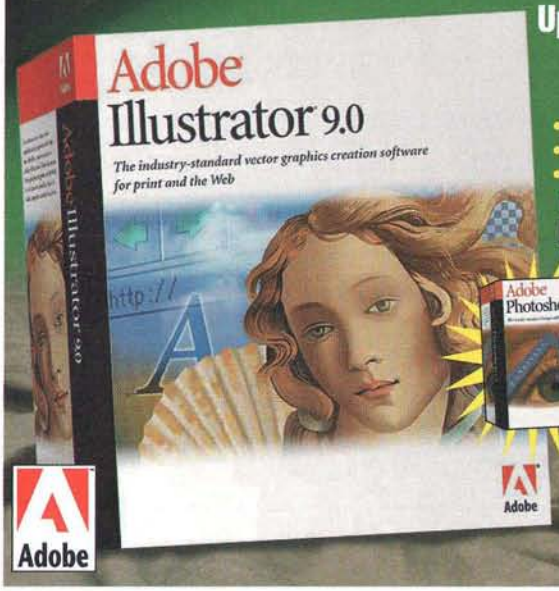
WAREHOUSE.com

# Upgrade for as low as $149.95! Item #UPG1248

CALL FOR A FREE FULL-COLOR CATALOG!

Olympus • Epson • ATI • Sony • Adobe • Macromedia

## NEW VERSION! Adobe Illustrator 9.0




Upgrade only $149.95! Item #UPG1248

- Unlimited transparency capabilities
- Live object and layer effects
- Superb integration with other Adobe programs

Illustrator 9.0 Full Version Item #GRA3325 ..... $389.95

### Adobe Photoshop 5.5

Adobe Photoshop 5.5 Upgrade Item #UPG1049 ..... $179.95

Adobe Photoshop 5.5 (Full Version) Item #GRA2951 ..... $599.95

Adobe Photoshop LE Item #GRA2973 ..... $99

### NEW VERSION! Adobe GoLive 5.0

GoLive 5.0 Upgrade Item #UPG1254 ..... $99.95

GoLive 5.0 Competitive Upg. Item #SID1014 $149.95

GoLive 5.0 Full Version Item #COM1343 ..... $289.95

### Dreamweaver 3

Upgrade only $119.95! Item #UPG1157

- QuikTag Editor for editing code at the object level
- History Palette and "Repeat Last Action" feature
- Apply global styles and convert tables to layers

Dreamweaver 3 Full Version, item #COM1301, only $279.95.

macromedia

### Sony Digital FD85 Mavica

Only $699.95! Item #IN8614

New!

- 1.3 megapixel
- 3x Optical/6x Digital Zoom
- 4x Quick access floppy
- 2.5" Solar LCD

MPEG/Voice recording modes included

SONY

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**Service you can depend on!** Consult the chart below to see which warranty best fits your needs:

| Cost of Computer and/or Peripherals | Warranty Price (36 months) | Ask for item # |
|---|---|---|
| $701 - $1,200 | $149.99 | MW3003 |
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*Note: This promotion is not a service agreement, but an outline of coverage available through Service Net. Please call Micro Warehouse, Inc. for information and read the complete Service Agreement from Service Net, for exact coverages, terms, and conditions. Coverage begins after a manufacturer limits its warranty in any way. Plan not available on international orders.

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- Easy installation means you'll be up and running in no time!

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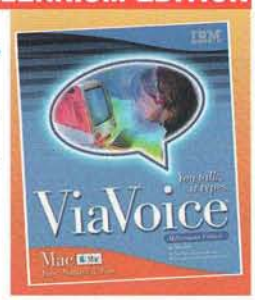


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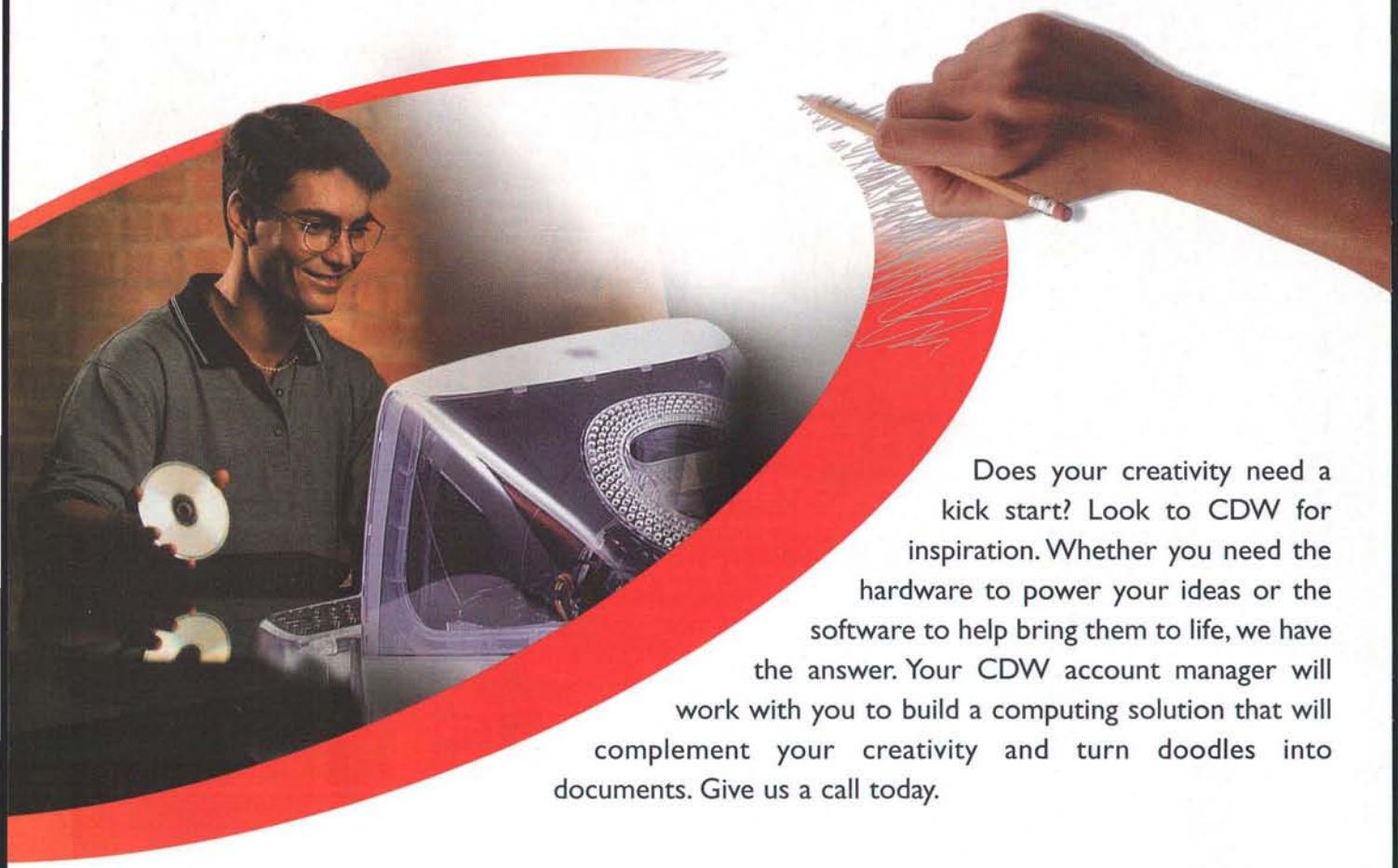

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- 400MHz PowerPC™ G3 processor
- 15" display, 13.8" viewable image size
- 512KB backside Level 2 cache
- 64MB SDRAM
- 10GB hard drive
- 4X Max DVD-ROM drive
- 56Kbps (V.90) modem
- 10/100BASE-T Ethernet

| | |
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| Tangerine | CDW 190110 |
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**$1294.00**

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***Special features include:***

- 400MHz PowerPC G3 processor
- 128MB SDRAM
- 13GB hard drive
- Two FireWire® ports

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Authorized Reseller

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- Up to 500MHz PowerPC G4 processor
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**Starting at**

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- Mac OS 9 with QuickTime

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## NEC/Mitsubishi MultiSync FE700

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MacLinkPlus Deluxe V11.0 lets you open Windows files on any Mac. Then, use and share files from most Windows and Mac programs in almost any program on your Mac.

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## Harmon Multimedia iSub

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- USB interface

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APS Pro

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APS Pro2

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## Strong drive

**$589.95**

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- Ideal for personal video storage and editing, large-scale imaging/graphics

### APS ST 73GB Ultra160 LVD SCSI

- 10,000 rpm LVD drives offer you fastest reliability and performance
- 73GB for your most data-intensive creations

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Internal Configuration

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APS Pro2

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- Back up 4.7 GB (native), 9.4GB (compressed) with IEEE 1394/FireWire interface
- Shipping September 2000

**APS Ultra2 Wide / Ultra160 LVD SCSI Drives**

| Model | RPM | *Internal | APS Pro |
|---|---|---|---|
| APS ST 9GB Ultra160 LVD | 7200 | $249.95 | $319.95 |
| APS ST 9.1GB Ultra160 LVD | 10000 | 359.95 | 429.95 |
| APS ST 18GB Ultra160 LVD | 7200 | 369.95 | 439.95 |
| APS ST 18GB Ultra160 LVD | 10000 | 499.95 | 569.95 |
| APS ST 36GB Ultra160 LVD | 10000 | 879.95 | 949.95 |
| APS ST 50GB Ultra2 Wide LVD | 7200 | 899.95 | 969.95 |
| APS ST 73GB Ultra160 LVD | 10000 | 1,499.95 | 1,569.95 |

*Drives listed above carry a five-year warranty.*

** Internal configuration does not include a mounting bracket. Intended as a replacement internal SCSI drive.*

**APS USB and FireWire Hard Drives**

| Model | APS Pro2 |
|---|---|
| APS 10GB USB Hard Drive | $199.95 |
| APS 20GB USB Hard Drive | 249.95 |
| APS 20GB FireWire Hard Drive | 389.95 |
| APS 45GB FireWire Hard Drive | 589.95 |

*Drives on these pages are covered by the APS 30-Day Money-Back Guarantee.*

**APS CD-RW Drives**

| Model | Price |
|---|---|
| APS CD-RW 4x4x24 USB | $279.95 |
| APS CD-RW 12x4x32 SCSI Pro | 299.95 |
| APS CD-RW 12x4x32 FireWire | 399.95 |

**$449.95**

APS Pro

### APS ST 18GB Ultra SCSI

- Sixth-generation Barracuda mechanism
- Perfect for design/publishing with an ultra-low price

**APS Ultra SCSI Drives**

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|---|---|---|---|
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| APS ST 18GB | 7200 | 399.95 | 449.95 |

*Drives listed above carry a five-year warranty.*

**APS IDE Ultra ATA/66 Drives**

| Model | RPM | Internal |
|---|---|---|
| APS 10GB IDE | 5400 | $119.95 |
| APS 30GB IDE | 7200 | 149.95 |
| APS 45GB IDE | 7200 | 399.95 |

*Drives listed above carry a one-year warranty.*

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| | |
|---|---|
| APS Q 8GB Internal 5400 rpm IDE refurb | $ 99.95 |
| Zip 250 Parallel Port Ext. | 69.95 |
| LaCie 6GB USB Hard Drive Ext EKO | 159.95 |
| 4GB U2W LVD External Viking II 7200rpm | 179.95 |
| 2x4GB UW SCSI SW Array Short Stack 7200rpm | 299.95 |
| 9GB U2W LVD Ext. Barracuda Refurb 7200rpm | 199.95 |

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## Best price on backup

**APS Tech exclusive! Each tape drive includes both Mac and PC Retrospect software.**

### APS HyperDAT® III SCSI

- 12GB (native), 24GB (compressed) backup for high-end workstations, entry-level networks
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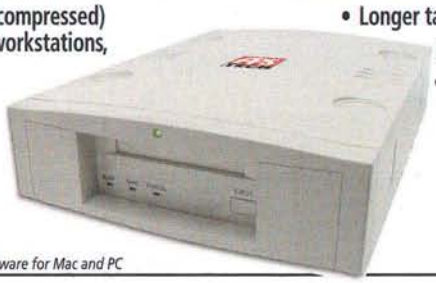

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*APS Pro2 case with Retrospect software for Mac and PC*

### APS HyperDAT® IV LVD

- Longer tape, higher density vault DDS-4 into corporate network backup
- 20GB native capacity, 2-3 MB/s transfers

**$1,099.95**

*APS Pro2 case with Retrospect software for Mac and PC*

### APS Tape Backup

| Model | Price |
|---|---|
| APS NS-20 (Travan NS-20) SCSI PRO2 | $499.95 |
| APS HyperDAT® III (DDS-3) SCSI PRO2 | 799.95 |
| APS HyperDAT® IV (DDS-4) LVD PRO2 | 1,099.95 |
| APS DLT8000 LVD | 4,399.95 |
| APS AIT PLUS Ultra Wide Pro | 1,899.95 |
| APS AIT II LVD Pro | 3,799.95 |
| APS AIT Autoloader Ultra Wide | 3,799.95 |
| APS AIT II Autoloader LVD | 5,499.95 |
| APS DDS-3 Autoloader SCSI | 2,599.95 |
| APS DDS-4 Autoloader LVD | 3,499.95 |

*Ships with Retrospect software for Mac and PC*

## Sharp-shooters

### Canon ZR10 Digital Video Camcorder

- FireWire/IEEE 1394 DV terminal
- Analog line-in for making copies, preserving originals
- 10X optical zoom lens, 200X digital zoom

**$899.95**

### Nikon Coolpix 800

- 8MB CompactFlash™ stores 200 images
- 2x optical zoom zeroes in on the action

**$599.95**

### Digital Video Camcorders*

| Model | Price |
|---|---|
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| Canon GL1 | CALL |
| Canon Optura Pi | CALL |
| Canon ZR10 | $899.95 |

### Digital Cameras*

| Model | Price |
|---|---|
| Sony Digital CyberShot DSC-S30 | $499.95 |
| Sony Digital CyberShot DSC-S50 | 599.95 |
| Sony Digital CyberShot DSC-S70 | 799.95 |
| Olympus C-2020 Zoom | 699.95 |
| Olympus C-3030 Zoom | 999.95 |
| Olympus C-2500L | 1,499.95 |
| Nikon Coolpix 800 | 599.95 |
| Nikon Coolpix 990 | 999.95 |
| EPSON PhotoPC 800 | 599.95 |
| EPSON PhotoPC 750z | 499.95 |

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| Model | Price |
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| *Printers* | |
| EPSON Stylus Color 900 Printer | $399.95 |
| EPSON Stylus Photo 1200 USB Color Printer | 499.95 |
| EPSON Stylus Color 1520 Printer | 499.95 |
| EPSON Stylus Color 3000 (Mac and PC) | 1,249.95 |
| EPSON Stylus Pro 5000 Color Printer | 2,999.95 |
| *Scanners* | |
| Nikon Coolscan III (LS-30) (Mac/PC) | $799.95 |
| Nikon Coolscan 2000 (LS-2000) | 1,599.95 |
| UMAX Astra MX3 Flatbed Scanner | 199.95 |
| UMAX Astra 2400S Flatbed Scanner | 299.95 |
| UMAX PowerLook III w/ Trans. Adapter | 1,199.95 |
| UMAX PowerLook 1100 w/Photoshop | 1,399.95 |
| UMAX PowerLook 2100XL | 2,199.95 |
| UMAX Mirage II Flatbed Scanner | 1,999.95 |

### Power Management

| Model | Price |
|---|---|
| APC Surge Station Pro 8 | $32.95 |
| APC Surge Station Pro 8 w/ 2 Tel | 37.95 |
| APC Net 8 Surge Station | 33.95 |
| APC Net 8 Surge Station w/ Net P | 47.95 |
| APC Line Conditioner, R-600 APC | 99.95 |
| APC Line Conditioner, R-1250 APC | 129.95 |
| APC BackUPS Pro 280S APC | 134.95 |
| APC BackUPS Pro 420S APC | 229.95 |
| APC BackUPS Pro 650S APC | 269.95 |
| APC BackUPS Pro 1000S APC | 389.95 |
| APC BackUPS Pro 1400S APC | 499.95 |

### Displays*

| Model | Price |
|---|---|
| *Sony Monitors* | |
| F-Series Monitor 19" Sony GDM-F400 | $929.95 |
| F-Series Monitor 21" Sony GDM-F500R | 1,799.95 |
| G-Series Monitor 19" Sony CPD-G400 | 649.95 |
| G-Series Monitor 21" Sony CPD-G500 | 1,199.95 |
| *LaCie Monitors* | |
| LaCie electron19blue | $669.95 |
| LaCie electron22blue | 1,299.95 |
| *Sony LCD Displays* | |
| Sony Multiscan SDM-N50 | $1,499.95 |
| Sony Multiscan CPD-M151 | 999.95 |
| Sony Multiscan CPD-L181 | 3,299.95 |

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### Sony Multiscan SDM-N50 15" (viewable) LCD Display

- Incredible 1/2" thin screen, under six pounds
- Best of Show winner, COMDEX '99

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MW EDITORS' CHOICE

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Seagate 9.1 GB SCSI
ST39140N-50 pin
$239 internal
$299 external

NEW!
Seagate Cheetah X15
18.2GB Ultra160
ST318451LW-15000RPM
4ms seek, 4096K cache
$579 internal
$679 external

Retrospect BACKUP
$49 with hard drive purchase
Turn your hard drive into an automated backup device! *Perfect with PowerSTOR Value drives*
Mac/Win

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- RAID Level 0,1, & 5
- 40MB/sec transfer rates
- Host Independent Mac/NT/Sun
- Dual 250w redundant & load sharing hot swapable power supplies & cooling fans
- Up to 128MB cache
- Hot swapable drives
- LCD panel for quick and easy readout of RAID status
- Supports auto-rebuild
  Incudes PCI card & cables Mac/PC

| | | | |
|---|---|---|---|
| **50GB** | raid 5 | $2965 |
| **75GB** | raid 5 | $3165 |
| **100GB** | raid 5 | $3375 |
| **150GB** | raid 5 | $3775 |
| **225GB** | raid 5 | $4275 |
| **300GB** | raid 5 | $5495 |
| **375GB** | raid 5 | $6345 |

Hot Swap Drives
Hot Swap Power
Hot Swap Fans

**Web Server**
**File Server**
**AV Editing**
RAID 0

NEW!

## PowerRAID OSA
open system architecture

Mac, Win, Unix

- RAID Level 0,1, 3, 5 & 0+1
- 80MB/sec transfer rates
- Host Independent Mac/NT/Unix
- Dual 300w redundant & load sharing hot swapable power supplies & cooling fans
- Up to 128MB cache
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- True LVD to LVD RAID Solution

Rackmounts for web servers-up to **2Terabytes**

**SAN Ready**
**Web Server**
**File Server**
**Archiving**
**AV Editing**
RAID 0

| | | |
|---|---|---|
| **126GB**-7200RPM | raid 5 | $7265 |
| **126GB**-10000RPM | raid 5 | $7835 |
| **126GB**-15000RPM | raid 5 | $9560 |
| **252GB**-7200RPM | raid 5 | $9645 |
| **252GB**-10000RPM | raid 5 | $10565 |

## PowerRAID
RAID level 0 for Macintosh AV Editing

BEST BUY

NEW!

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|---|---|---|
| **36GB**-7200RPM | raid 0 | $1695 |
| **36GB**-10000RPM | raid 0 | $1945 |
| **36GB**-15000RPM | raid 0 | $2240 |
| **72GB**-7200RPM | raid 0 | $2395 |
| **72GB**-10000RPM | raid 0 | $2595 |
| **144GB**-7200RPM | raid 0 | $3920 |
| **144GB**-10000RPM | raid 0 | $4295 |

Includes PCI Ultra2 Card, cables, and Charismac RAID
custom configurations available

Rackmounts Available...
Capacities up to 2TB!

## nas storage

Quantum Snap Server

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|---|---|---|
| **15GB**-Snap1000 | raid 1 | $595 |
| **30GB**-Snap2000 | raid 1 | $895 |
| **60GB**-Snap2000 | raid 1 | $1775 |
| **120GB**-Snap4000 | raid 1 | $2995 |

If you're considering purchasing a file server to increase file storage capacity on your network, a Snap Server is a better alternative to deploying a traditional NT or Novell server. A Snap Server saves you time and money, yet delivers reliability, performance and connectivity as well as general-purpose file servers. Ethernet Ready Storage!

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$20.00 off any card with drive purchase

adaptec

| | |
|---|---|
| 2906 SCSI-2 DB25 | $59 |
| 2930U Ultra SCSI HD50 | $99 |
| 29160N Ultra160 HD50 | $329 |
| 39160 Ultra 160 .8mm | $429 |

external cables sold separately

ATTO

| | |
|---|---|
| EPCI-PSC Ultra Wide | $199 |
| EPCI-DC Dual Ultra Wide | $99 |
| EPCI-UL2S Ultra2 | $299 |
| EPCI-UL2D Dual Ultra2 | $439 |
| EPCI-UL3D Ultra 160 | $429 |

external cables sold separately

## tape backup
Cross Platform

Retrospect included for Macintosh & Windows

Quantum

| | |
|---|---|
| 30GB DLT2000XT | $895 |
| 40GB DLT4000 | $1789 |
| 70GB DLT7000 | $4589 |
| 80GB DLT8000 | $4889 |

ATL Autoloaders available-call for quotation

SONY

| | |
|---|---|
| 8GB SDT7000 DAT | $695 |
| 24GB SDT9000 DAT | $795 |
| 40GB SDT11000 DAT | $1195 |
| 70GB SDX300AIT | $2195 |
| 100GB SDX500AIT | $4195 |

Autoloaders available-call for quotation

# PowerSTOR™

## ultra160 hard drives

**seagate BARRACUDA** ultra160,7200RPM,5.9ms,2048K

| | | | |
|---|---|---|---|
| **9.1GB** | (ST39236LW) | $215 | $305 |
| **18.2GB** | (ST318236LW) | $325 | $415 |

**seagate CHEETAH** ultra160,10000RPM,5.9ms,4096K

| | | | |
|---|---|---|---|
| **9.1GB** | (ST39204LW) | $275 | $365 |
| **18.2GB** | (ST318404LW) | $415 | $505 |
| **36.4GB** | (ST336704LW) | $660 | $750 |
| **73.0GB** | (ST173404LW) | $1265 | $1355 |

NEW!

**seagate CHEETAH X15** ultra160, **15000RPM**, 5.9ms,4096K

| | | | |
|---|---|---|---|
| **18.2GB** | (ST318451LW) | $545 | $635 |

**ibm ULTRASTAR 36LP** ultra160,7200RPM,5.9ms,4096K

| | | | |
|---|---|---|---|
| **9.1GB** | (07N3120) | $239 | $329 |
| **18.2GB** | (07N3110) | $349 | $439 |
| **36.4GB** | (07N3100) | $569 | $639 |

**ibm ULTRASTAR 36LZX** ultra160,10000RPM,5.9ms,4096K

| | | | |
|---|---|---|---|
| **9.1GB** | (07N3220) | $269 | $359 |
| **18.2GB** | (07N3210) | $409 | $499 |
| **36.4GB** | (07N3200) | $649 | $839 |

**quantum ATLAS V** ultra160,7200RPM,5.9ms,4096K

| | | | |
|---|---|---|---|
| **9.1GB** | (QM309100XC-LW) | $199 | $289 |
| **18.2GB** | (QM318300XC-LW) | $319 | $409 |
| **36.4GB** | (QM336700XC-LW) | $639 | $729 |

**quantum ATLAS 10KII** ultra160,10000RPM,5.9ms,4096K

| | | | |
|---|---|---|---|
| **9.1GB** | (QM309200TY-LW) | $299 | $379 |
| **18.2GB** | (QM318400TY-LW) | $479 | $569 |
| **36.4GB** | (QM336700TY-LW) | $849 | $939 |
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|---|---|---|---|---|
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| 9.2GB | 10,000 | 8MB | TY309200LW | $345 |
| 18.4GB | 7200 | 4MB | XC318400LW | $345 |
| 18.4GB | 10,000 | 8MB | TY318400LW | $519 |
| 36.7GB | 7200 | 4MB | XC336700LW | $675 |
| 36.7GB | 10,000 | 8MB | TY336700LW | $899 |
| 73.4GB | 10,000 | 8MB | TY373400LW | $1599 |
| **IDE ULTRA ATA/66** | | | | |
| 7.5GB | 5400 | 512K | QML07500LC | $83 |
| 10.2GB | 7200 | 2MB | QMP10200LM | $109 |
| 15.0GB | 5400 | 512K | QML15000LC | $115 |
| 15.0GB | 7200 | 2MB | QMP15000LM | $125 |
| 20.0GB | 5400 | 512K | QML20000LC | $129 |
| 20.5GB | 7200 | 2MB | QMP20500LM | $159 |
| 30.0GB | 5400 | 512K | QML30000LC | $172 |
| 30.0GB | 7200 | 2MB | QMP30000LM | $195 |

### IBM — Call for SCA Drives!

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| 9.1GB | 7200 | 4MB | 07N3120 | $242 |
| 9.1GB | 10,000 | 4MB | 07N3220 | $279 |
| 18.2GB | 7200 | 4MB | 07N3110 | $359 |
| 18.3GB | 10,000 | 4MB | 07N3210 | $425 |
| 36.4GB | 7200 | 4MB | 07N3100 | $599 |
| 36.4GB | 10,000 | 4MB | 07N3200 | $665 |
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| 20.5GB | 7200 | 2MB | 07N3928 | $165 |
| 30.7GB | 7200 | 2MB | 07N3929 | $199 |
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| 10.2GB | 5400 | 512K | WDAC102AA | $89 |
| 10.2GB | 7200 | 2MB | WDAC102BA | $109 |
| 15.3GB | 5400 | 512K | WDAC153AA | $106 |
| 15.3GB | 7200 | 2MB | WDAC153BA | $127 |
| 20.5GB | 5400 | 2MB | WDAC205AA | $119 |
| 20.5GB | 7200 | 2MB | WDAC205BA | $155 |
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| 9.2GB | 10,000 | 4MB | ST39204LW | $275 |
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| 73.4GB | 10,000 | 16MB | ST173404LWV | $1239 |
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| 10.2GB | 5400 | 512K | ST310212A | $89 |
| 10.2GB | 7200 | 2MB | ST310210A | $119 |
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| 15.3GB | 7200 | 2MB | ST315320A | $125 |
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| 30.7GB | 7200 | 2MB | M53073U6 | $195 |
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| 20.0GB | 9.5mm | Toshiba | MK2016MAP | $Call |
| 5.0GB | 9.5mm | IBM | 07N4391 | $135 |
| 10.0GB | 9.5mm | IBM | 07N4390 | $225 |
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| 4-8GB | 60MB/min | HP C1599AI | $549 |
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| 72-144GB | 120MB/min | HP 6 tape load DDS-3 C5648A | $1989 |
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| 20-40GB | 360MB/min | EXB8900 | $2119 |
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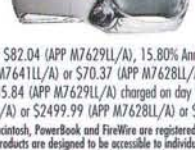

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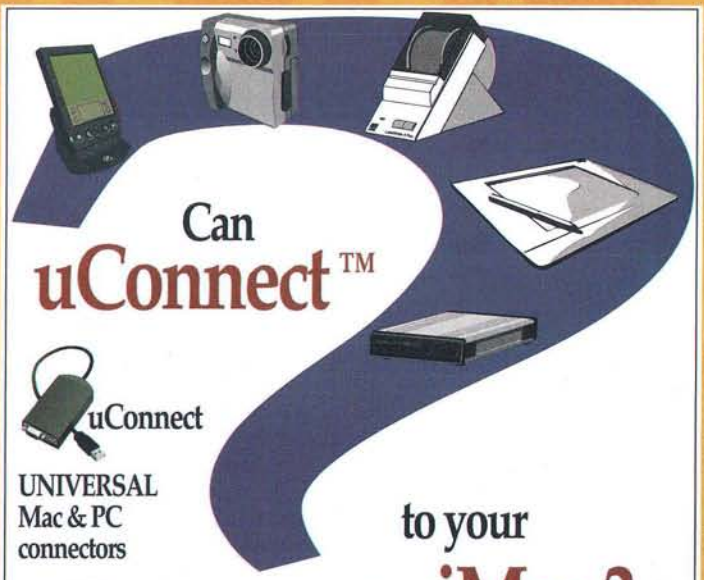

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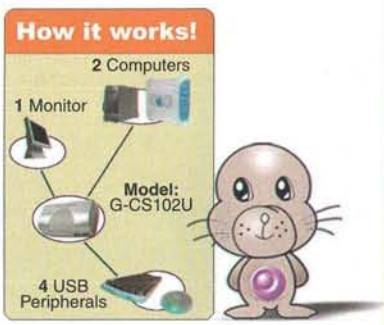


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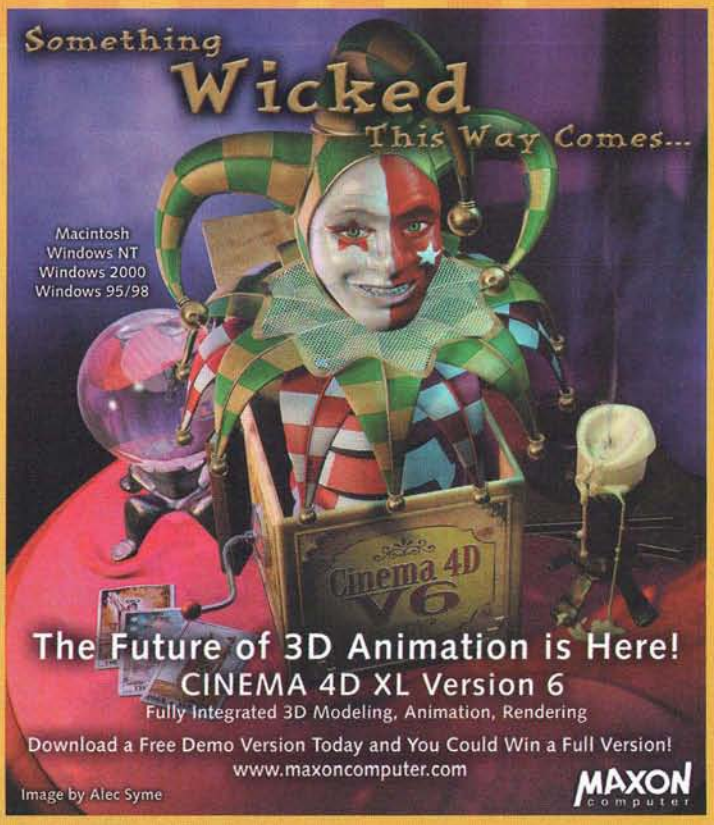


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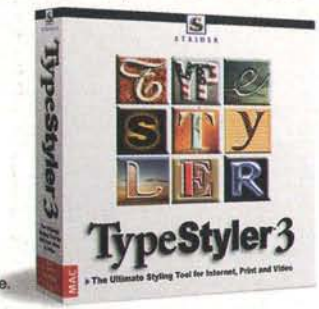


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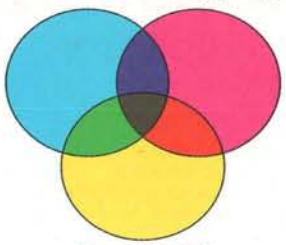

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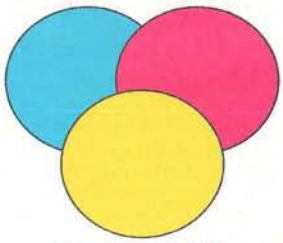

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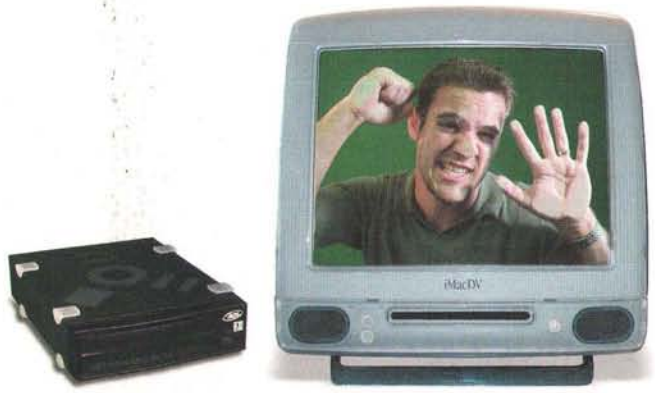


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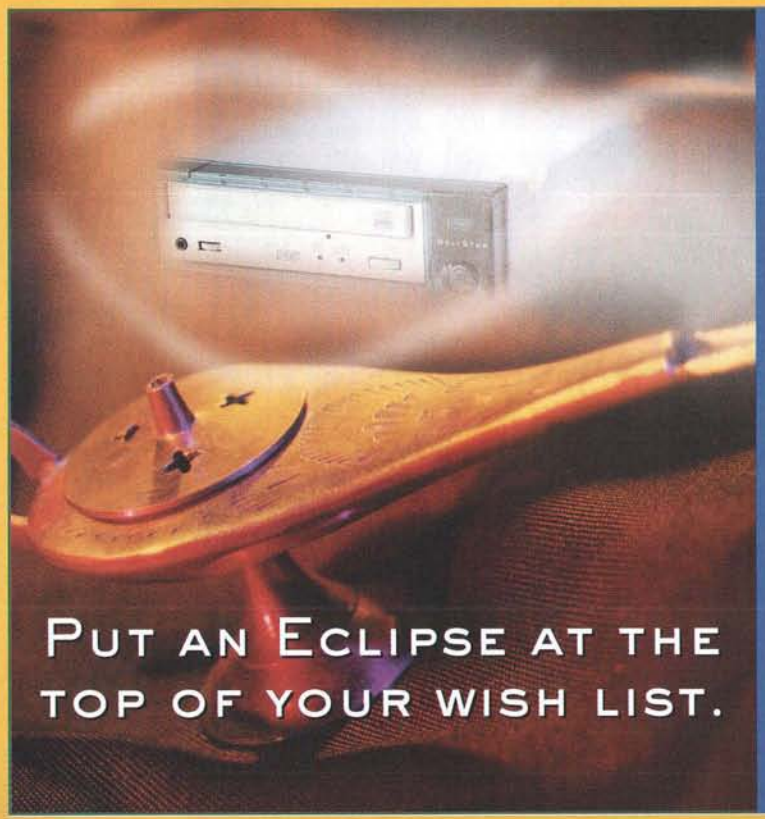


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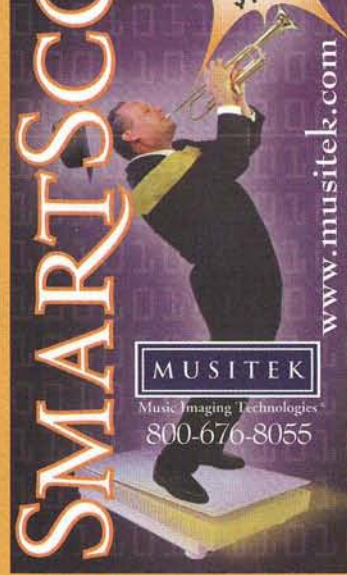

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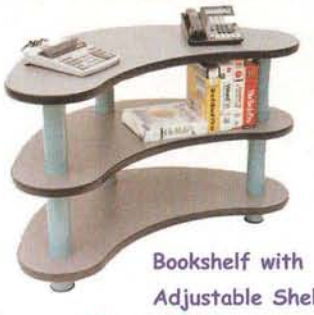

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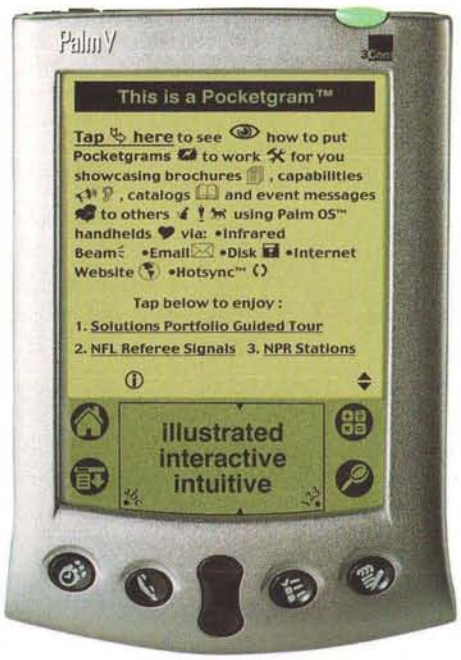


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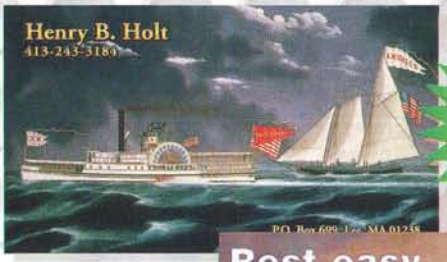


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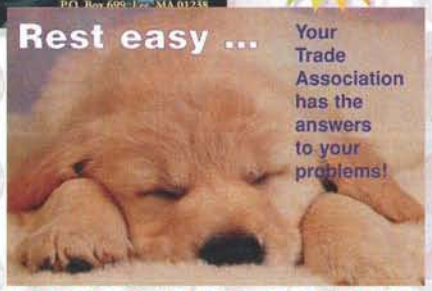


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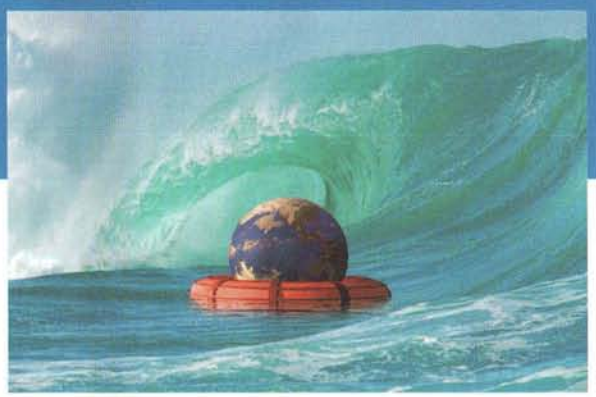

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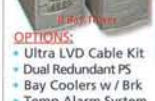

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*continued from page 200*

settled on a proposal to divide Gates's duties. He could continue to scheme, plot, and manipulate the world—as long as he remained within 50 feet of the Microsoft campus in Redmond, Washington.

Another Microsoft employee would assume the role of public ambassador. This arrangement, analysts say, would do wonders for Microsoft's credibility: a well-groomed person dressed in actual business clothes is less likely to revolt TV viewers.

### Computer Magazines

"Those little subscription postcards that fall out onto the rug make absolutely no sense," a crabby Judge Jackson said. "We're already subscribers, for God's sake—what's the point of littering our carpets with come-ons?" Jackson will recommend to Janet Reno that computer magazines be prohibited from incorporating such "blow-in" cards. Instead, at the end of every year, each subscriber will receive a separate, neatly bundled packet of 500 subscription cards that he or she can discard or recycle in one swift gesture.

### Spammers

"It may surprise many Internet citizens," noted Judge Jackson, "but according to my findings of fact, people who send junk e-mail are actually human. And yet they have no regard for other human life and no sense of self-loathing." Clearly, the judge pointed out, these people's brains are defective.

Their bodies, however, are fully functional, capable of turning on a computer, plugging in a modem, and typing **MAKE $150K SALTING CRACKERS AT HOME!** By surgically removing their brains, said Jackson, one could annul this unfortunate pairing of warped mind with healthy body.

At a secret briefing, a *Macworld* staffer asked, "But wouldn't brain removal pretty much *kill* these people?" Judge Jackson had a quick answer: "The consequences aren't my concern. As in the Microsoft case, my job is just to get the ball rolling."

His Honor then checked his watch and rose from the table. "Unfortunately, that's going to have to do it," he said. "I've gotta split." **m**

DAVID POGUE (www.davidpogue.com) is the author of *Mac OS 9: The Missing Manual* and *iMovie: The Missing Manual* (both Pogue Press/O'Reilly, 2000).

DAVID POGUE

# Calling It Splits

## JUDGE JACKSON: "MICROSOFT WAS ONLY THE BEGINNING"

**Earlier this year, U.S. District Court Judge Thomas Penfield Jackson made worldwide headlines when he proposed breaking up Microsoft into two smaller companies. "Microsoft would do the world a lot more good if its Windows division weren't in bed with its applications division," he said at the time.**

This month, warming to his newfound celebrity, Judge Jackson is back in the spotlight with even more proposals. "Clearly, my Microsoft action was a big hit with the American public," he told *Macworld* in an exclusive, completely fabricated interview. "I was on *Time*'s 'Digital 50' list, I made front-page headlines, I got fan mail from people I'd never even met. But when the excitement started to die down, I got to thinking: What can I do for an encore?"

Plenty, as it turns out. Judge Jackson recently gave *Macworld* a sneak peek at documents he plans to file with the U.S. Department of Justice. These are the split-ups Jackson thinks could benefit humanity.

### Apple

"How many times have I heard Mac fans say, 'I love the Macintosh—I just don't care for the company that makes it'?" asked Jackson. "Well, the time has come to do something about it." Under the judge's proposal, Apple would split into two entities: Macintosh Corporation, which would make Mac computers, and Apple Ego, which would continue to maintain the air of superiority and smugness that has pervaded the company for years.

"It makes sense," Gartner Group analyst Fred Fictionale commented. "The Mac company would become a beloved corporation, as friendly to customers as L.L. Bean and as supportive of programmers as Palm. Apple Ego, on the other hand, could pursue its arrogance without risking negative public-relations fallout. It could continue to make developers pay for the privilege of writing Mac software, send legal threats to Web sites that give free airplay to Apple TV ads, and charge its customers $50 per call for technical help. And Apple Ego could take over the manufacture and promotion of the ultimate symbol of the company's we-know-better-than-our-customers attitude: the hockey-puck mouse."

### Bill Gates

"Let's face it," Judge Jackson said, "Bill Gates may be the smartest programmer, the best businessman, and the richest human in the world. But they really shouldn't let him out in public. Every time he opens his mouth, he gets his company in trouble. And as for his attire—let's not even go there. Did you see his portrait on the cover of *New York Times Magazine*? Icky! The guy didn't even shave!"

After discarding an early plan to merely separate Gates from his sweaters, Jackson

*continues on page 199*

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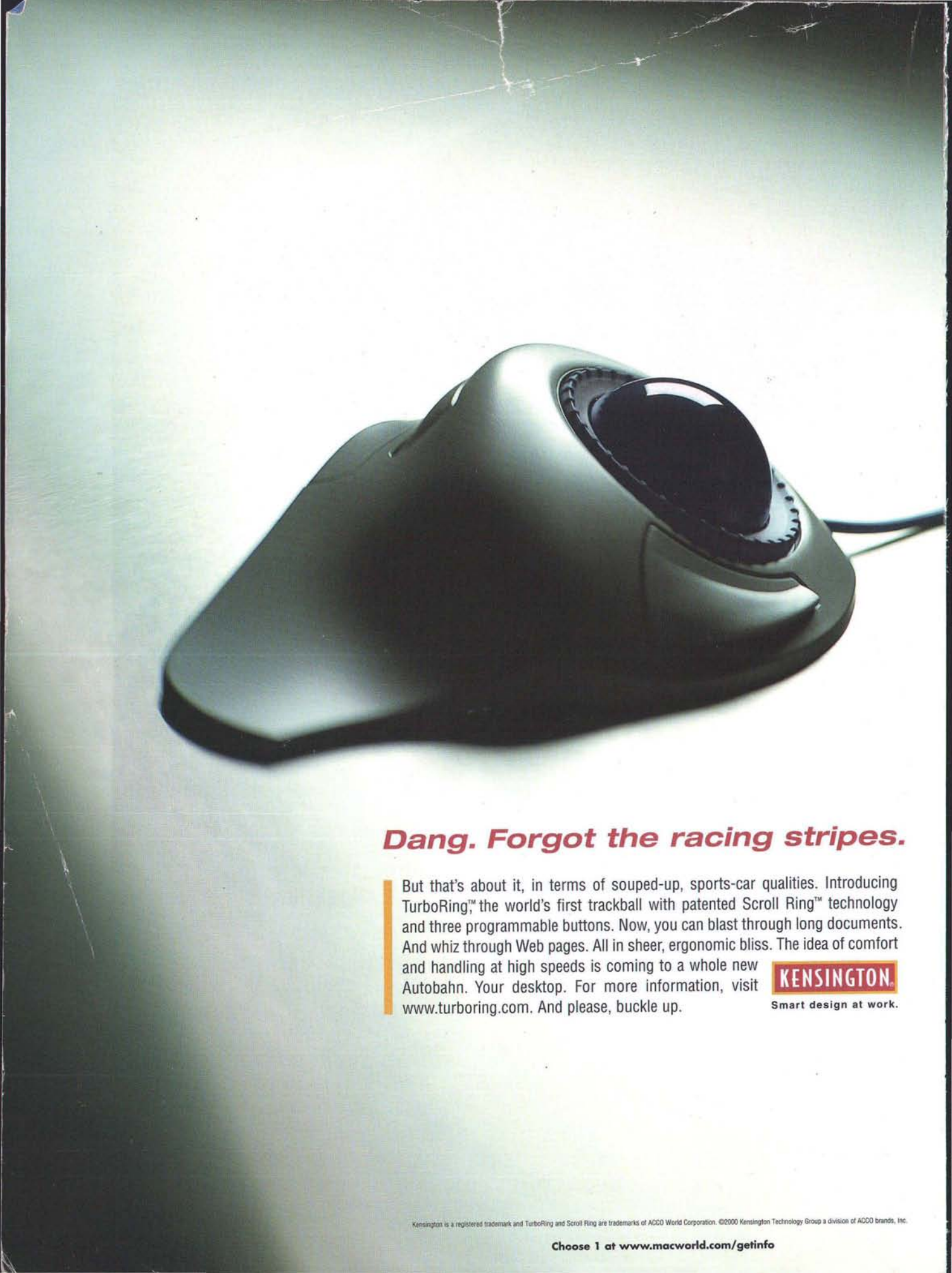

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